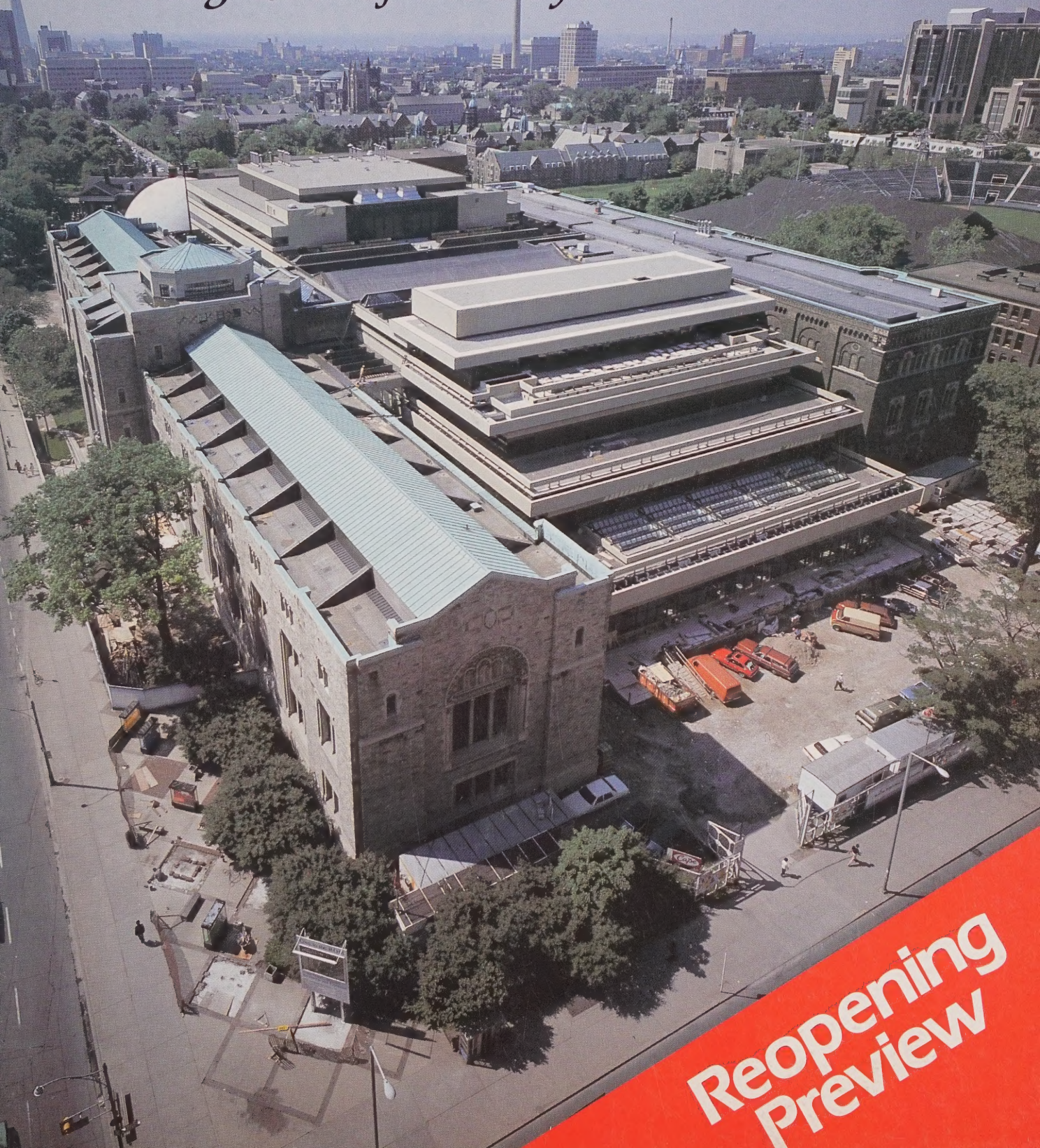


Summer 1982 Vol. 15/no. 2

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# ROTUNDA

*the magazine of the Royal Ontario Museum*



Reopening  
Preview





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# ROTUNDA

*the magazine of the Royal Ontario Museum*

Volume 15, Number 2, Summer 1982

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Cover: The Royal Ontario Museum, June 1982, from the north. (Photo: Brian Boyle, ROM)

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*The Royal Ontario Museum  
salutes the Canada Council  
on the occasion of  
its twenty-fifth anniversary.*



This issue of *Rotunda* heralds the reopening of the renovated main building of the ROM on Queen's Park—the first stage of the Museum's gradual reopening as our massive building project draws to its conclusion.

This is an exciting time for us all, as we embark on the constructive redevelopment of our great Museum. Rebuilding the galleries over the next few years and restoring those public services that closure forced us to suspend will be a great and challenging task. But it will also be a satisfying one, and will be undertaken in modernized and improved surroundings such as we have never known before, and which compare with the finest available in the museum world.

The reopening of the doors of the newly renovated Museum, scheduled for the summer of 1982, will be the quiet beginning of a dramatic series of events building in a crescendo towards Ontario's bicentennial celebrations commencing in 1984, and the sesquicentennial celebrations of the City of Toronto in June 1984. I would like to share with readers of *Rotunda* our plans for this gradual unfolding of our new Royal Ontario Museum; in addition to the progressive opening of galleries over the next few years, we have a particularly exciting programme of special temporary exhibitions planned for 1983 and 1984.

### **Gallery development**

Designing effective and attractive museum galleries is a lengthy, complex, and costly process. Planning for the new galleries began in 1975 when staff and consultants embarked on the preparation of a series of reports and publications, which have since received wide international acclaim. It was recommended, and agreed, that the new galleries should be designed in "clusters" rather than, as formerly, as a series each dealing separately with a single discipline or subject. (The "cluster" concept is the subject of an article by the coordinator of exhibit programming elsewhere in this issue.) The Mediterranean world cluster and the life sciences cluster

are examples of the new groupings.

Twenty gallery design teams have been hard at work planning the new galleries, each team including as a nucleus at least one curator, a designer, an educator, a programmer, and a conservator. By mid-1984, if all goes according to plan, the total area of completed galleries and exhibit space will be slightly more than it was before the Museum closed for renovation. From that time on, the remaining gallery areas will be developed as funds become available, and as our staff resources permit. The new ROM will eventually have some 19 800 m<sup>2</sup> of public gallery space.

### **The first new galleries**

Among the first galleries to open will be five that form part of the life sciences cluster. The galleries of invertebrate zoology, evolution, and botany are completely new; the reptile and arthropod galleries use elements of previous displays. Ultimately, life and palaeontological sciences will occupy the total gallery space available on the second floor (Level 2) of the Museum.

The first galleries in the Mediterranean world cluster opening this summer will deal with a variety of subjects. One gallery is devoted to the last period of prehistory; another examines the development of writing from its earliest beginnings. A gallery on early states traces the rise of the first great civilizations in Mesopotamia and Egypt. Other galleries provide a historic overview of the Levant (Israel, Jordan, and Syria), an examination of the concept of monotheism, and a glimpse of Islamic culture.

By mid-1984, we hope to have twenty-five galleries on Level 3 of the Museum illustrating for the visitor important chronological and conceptual links among a variety of diverse cultures and civilizations.

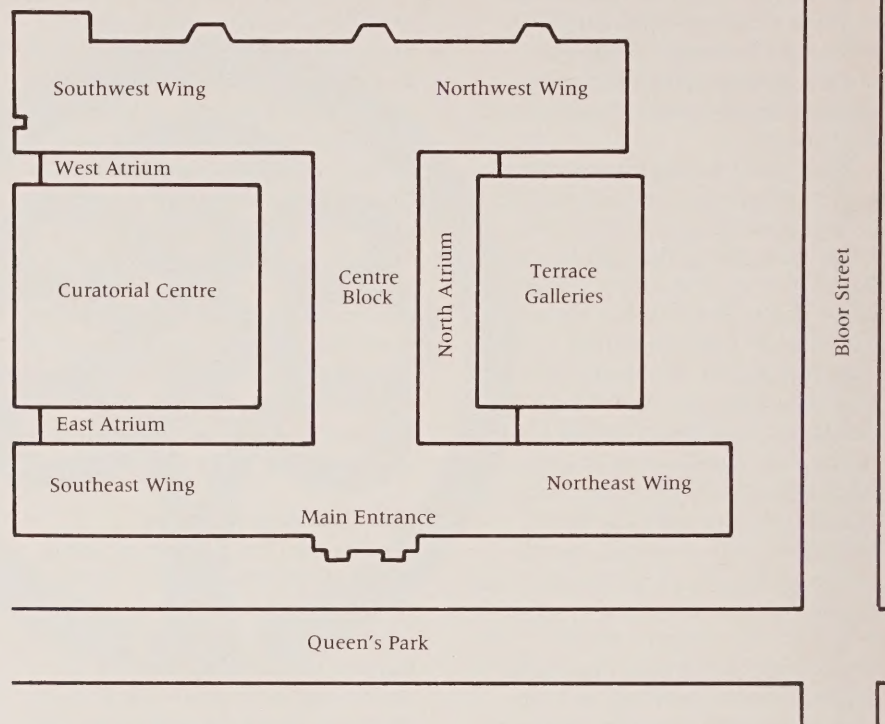
### **Future gallery plans**

Visitors will find both the Museum's popular dinosaur galleries and the invertebrate fossils gallery virtually intact, after various kinds of mechanical work, such as the installation of air-conditioning, have been

## *Prospect—ROM II*

James E. Cruise  
Director  
Royal Ontario Museum





completed later this year. The Man-kind Discovering gallery, also scheduled for opening this fall, will illustrate the creative role played by the Royal Ontario Museum in mankind's efforts to discover himself and his universe. It takes the visitor behind the scenes, where collections and ideas are brought together in the course of the research process. With changing displays of contributions from various disciplines, the gallery provides a framework that will give visitors a better understanding of the nature and purpose of the Museum's work, and will assist them in their own personal process of discovery in the galleries. Other plans for late 1982 include the opening of a gallery of mammalogy and a temporary life sciences exhibition.

The first half of 1983 will see the completion of the New World archaeology and ethnology galleries, a second gallery on mammalogy, additional galleries of the Mediterranean world cluster, the Ming tomb, and the Discovery gallery, an enlarged version of the former Discovery room. Later in the same year, an additional large block of Far East galleries, a gallery on ornithology

(part of the life sciences cluster), and the Planetarium's permanent exhibition area will open. By the summer of 1984, the exciting new prehistory gallery will be opened in the Terrace Galleries building.

During this two-year period, as more and more gallery areas are opened, many artifacts and specimens, such as the material from ROM archaeological digs in Iran, Jerusalem, and Jericho, will be on view to the public for the first time.

### Exhibitions

The new Museum provides excellent space for both large and small temporary exhibitions. The new exhibition hall on Level 1 of the main building compares very favourably in size and facilities with exhibition space in most major museums around the world.

Our exhibitions programme offers exciting prospects from the spring of 1983 onwards. Three exhibitions of international significance will open during the year—*The Search for Alexander* and *Treasures from the Tower of London (Arms and Armour)* in March, and *Silk Roads/China Ships* in September.



### THE SEARCH FOR ALEXANDER

The nucleus of this exhibition is one of the largest and most exquisite collections of antiquities ever circulated to North America by the Greek government. The one hundred works of art, largely crafted from precious metals and dated to the 4th and 3rd centuries B.C., came primarily from northern Greece, the homeland of Alexander the Great.

### TREASURES FROM THE TOWER OF LONDON (ARMS AND ARMOUR)

The Royal Ontario Museum will be the sole Canadian host for this spectacular exhibition of arms and armour from the Tower's unparalleled collections. This is the first exhibition of its kind ever to leave the Tower during its 900-year history. Approximately 120 masterpieces, dating from the 14th to the 19th century, are featured in the exhibition.

### SILK ROADS/CHINA SHIPS

The Silk Road has captured imaginations ever since the long-lost cities lying beneath the dunes of the Taklamakan desert began to surrender priceless treasures to archaeologists at the turn of the century. Images of camel caravans and clipper ships, the markets of Samarkand, Sian, and Antioch, the ports of Lisbon, London, and Amsterdam evoke the romance of the traffic in the luxury goods of the Orient. The Royal Ontario Museum's collections contain priceless artifacts that reflect all aspects of this trade. The exhibition will deal with the market setting, the trade routes, the goods traded, the tastes and fashions that followed the availability of goods, and the abstract ideas that moved along with the commercial interchange.

This will be the first major traveling exhibition of ROM materials, with 90 per cent of the artifacts coming from our own collections; it marks an exciting new departure that will characterize the dynamic and vital image of what we are already beginning to call ROM II. Our schedule calls for the exhibition to

be circulated to six additional centres after it closes at the ROM. Soon after it was announced to the museum community, more than twenty museums across North America had made application to host *Silk Roads/China Ships*.

### Public amenities

At long last our members will once again have their own private members' lounge. Located on the top floor of the Terrace Galleries building, the new facility will be much larger than the old members' lounge, and it will also be able to provide outdoor service on the terrace overlooking the ROM's small park along Bloor Street. The members' lounge is scheduled to open in the spring of 1983, just as our major exhibition programme gets under way. In the summer the new Museum cafeteria, located on Level 1 of the main building, will open. Almost twice the size of the old cafeteria, it will have one section for the general public and another for school groups.

Our Museum gift shop is also scheduled to reopen this summer with enlarged facilities and an exciting array of products from around the world.

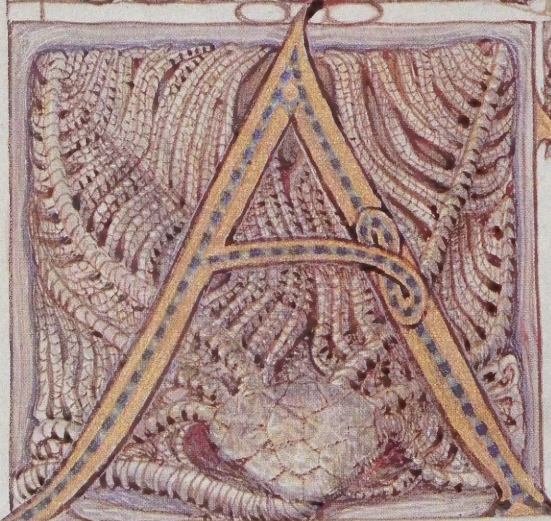
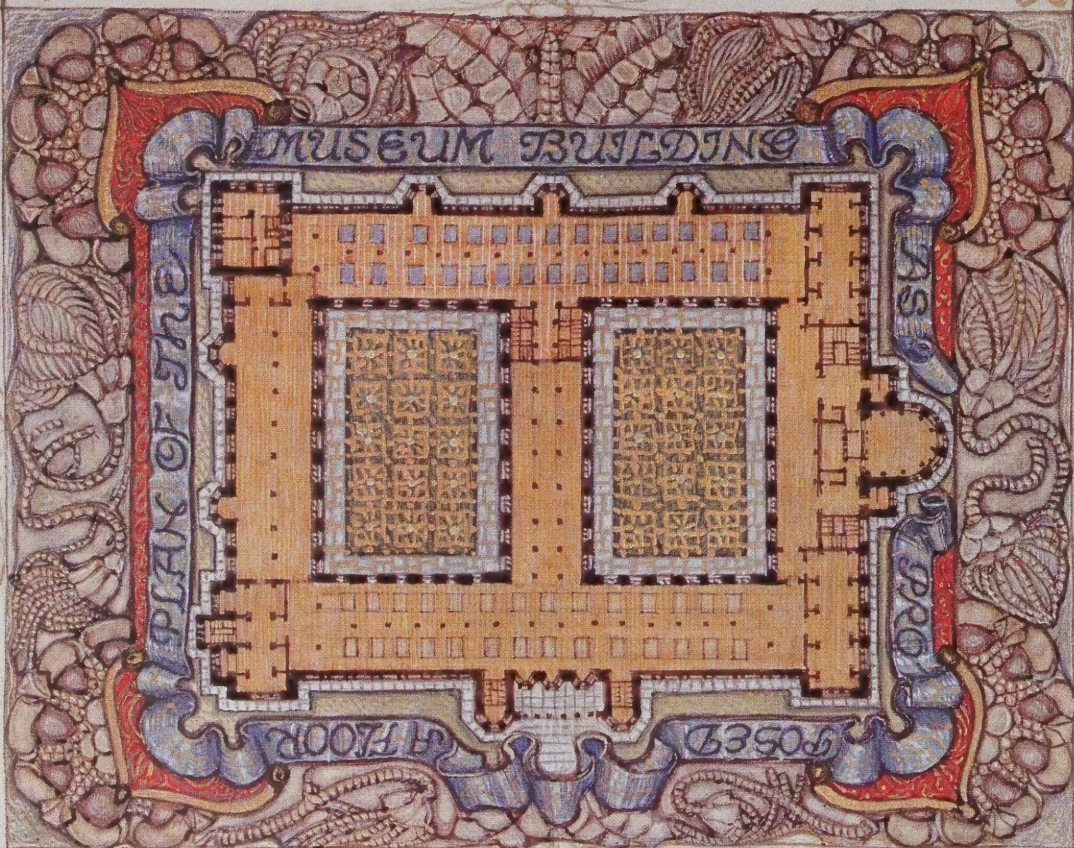
### Tribute

I should like to pay tribute to the remarkable loyalty of our Museum membership who have continued to support us throughout the period of closure. This is yet another indication of the high regard people in the community have for this truly great Canadian cultural and educational resource.

The Museum also appreciates the financial support provided by corporations, foundations, and private individuals who have made it possible to bring the renovation and expansion project to a successful conclusion. As we face our second phase of fund-raising to finance the ongoing construction of galleries in our new and renovated space, it is heart-warming to know that the Museum has so many friends. I thank you all for your support, and look forward to seeing many of you this summer. ©

We regret errors in photo credits in the last issue of *Rotunda*. The photos on the following pages should have been credited to Bill Robertson, ROM: 5 (bottom), 8 (top and middle), 9 (bottom), 10, 34, 35, 37, and 38. The photo on page 39 was not taken by Mr. Robertson.





As the Chairman  
of the Board of  
Trustees of the

# ROYAL ONTARIO MUSEUM

it is my great privilege  
to offer to Your Royal

Highness our sincere thanks for your gracious  
kindness in honouring the proceedings of the day by  
your presence.



# Retrospect—The First 75 Years

## *Expansion is nothing new to the ROM*

Loren A. Oxley

Readers of *Rotunda* know very well that the Royal Ontario Museum is much more than the famous collection of specimens and artifacts arranged and stored in impressive buildings on Queen's Park, Toronto. The collections and buildings are tangible evidence of enthusiasms, ambitions, adventures, sacrifices, and successes of many people over many years.

The official opening of the oldest part of the Royal Ontario Museum in 1914 represented the fulfilment of an ambition that had been shared by a number of leaders in academic, financial, and government circles in Toronto for more than a decade. The need for a central museum building for the University of Toronto began to be felt in the early years of this century. Core collections for teaching and research had been started in University departments of geology, mineralogy, palaeontology, and zoology. Through the efforts of University staff members and generous donations from friends of the University, the collections were growing beyond the limits of the space available in University buildings. Outstanding among a small group of private donors was Sir Edmund Walker, then president of the Bank of Commerce. He made possible important additions to the collection of fossils then located in the mining building on College Street. He also helped to fund the purchase of archaeological material which C. T. Currelly was sending home from Egypt, the Near East, and Europe. By 1909 Sir Edmund with some other prominent citizens had managed to cajole or bully the Ontario cabinet into promising funds for the design and construction of a museum building.

Planning the building began in an English railway carriage. In his lively book of memoirs, *I Brought the Ages Home*, Dr. Currelly tells the story. Shortly after he heard from Sir Edmund that a building would be possible, he was travelling with a group of Royal Academicians returning from Windsor Castle to London when he happened to meet Sir Aston Webb and immediately began to ply him with questions on how to build a museum. Sir Aston was one of the half-dozen or so most eminent Edwardian architects. Familiar to millions of television viewers is his façade of Buckingham Palace, which has been the backdrop for so many royal occasions; but he was also the architect for important additions to the Victoria and Albert Museum in London. He must have been favourably impressed by the young Canadian archaeologist, because he gave him a basic plan that was remarkably close to the one adopted by the Museum's first architects, and was further developed in the major addition of 1930–33. It served the Museum remarkably well for nearly seventy years.

The scheme had much to recommend it to a world still innocent of air-conditioning and modern lighting. A long narrow building would give daylight and ventilation to galleries on both sides. A multistorey layout would be economical of land, but three storeys and basement were as much of a climb as visitors could be expected to endure. The basic rectangle could be repeated as often as the size of the lot would allow, with open courts lighting the inner units.

The firm of Darling and Pearson was appointed as architects for the new



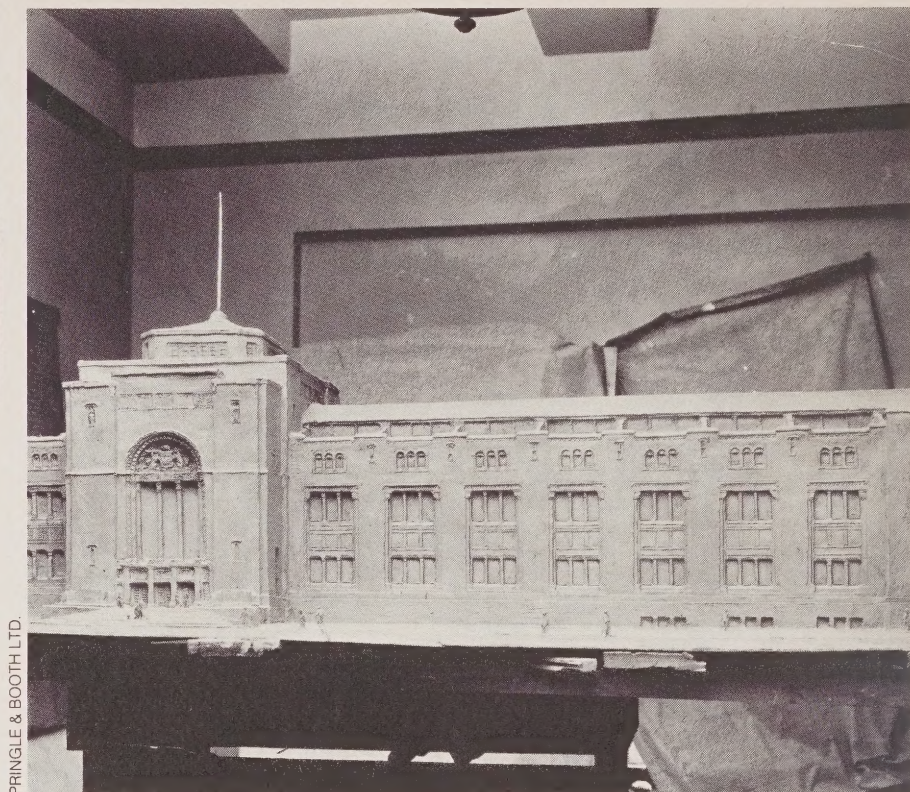
Left and above: When the Duke of Connaught, Governor General of Canada, officially opened the ROM in 1914, he was given a presentation address hand-lettered and illuminated by A. H. Howard, a Toronto artist. The address covers nine pages of vellum handsomely bound in inlaid and tooled leather. Although the volume was presented to the Duke as a gift, it has been reacquired by the Museum and is now preserved in the Museum archives. A full page (left) is given to a floor plan of the Museum as it was then proposed. The portion already built is distinguished by a slight change of the general tint. Another page (above) shows a view of the Museum's west façade in 1914.





Above: The oldest part of the ROM photographed shortly after it was built. This view of the west side shows the office block that later had two more storeys added on top of it.

Right: Clay study model of the façade of the wing built in 1931.



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building. They produced an impressive master plan for the entire site now covered by the Museum. Unfortunately, an amputated stump of the grand scheme was all that could be built within the available budget. The hoary architectural cliché of “Queen Anne front and Mary Ann back” is not strictly applicable, because the elaborate terracotta and brick corbelled cornice to the north and west is more 14th-century Italian than 18th-century English, but it makes an odd contrast with the simple brick embellishments on the east and south. The main entrance off Bloor Street seemed to be an insignificant introduction to an important institution, and the office portion at the south end was clearly only a beginning, still to be completed.

Construction was well advanced by 1912 when the Royal Ontario Museum Act created five semi-independent museums, each under its own director who was also a professor in the University of Toronto. The first and second floors of the building were given to archaeology; the top floor was occupied by palaeontology, mineralogy, and zoology; geology was placed, rather appropriately, in the basement. In 1914 the Royal Ontario Museum was officially opened by the Duke of Connaught, Governor General of Canada.

After this auspicious start, the museums carried on through the war years 1914–18 with diminished staffs and resources. A loyal gesture was made with the display of made-in-Canada weapons and ammunition right inside the front door. With the return of peace, the growth of all five museums was accelerated. Not only were the collections growing by leaps and bounds but the behind-the-scenes space needs for storage, preparation, research, and offices were building up almost intolerable pressures. There was a short-lived hope of a major addition in 1922. By 1926 Mr. J. B. O’Brien, who had followed Sir Edmund Walker as chairman of the board of trustees was asking the directors of the five museums for their advice and recommendations.

Their replies make interesting reading. It was generally agreed that the extension to the building would make an L with the existing structure and create a Bloor Street front. Each director had his own ideas about how the museums should be arranged within the building, but there was general agreement that the arrangement should follow a natural sequence through geology and miner-



**Q.** What do the following have in common?



**A.** You can read about them in *Rotunda*,  
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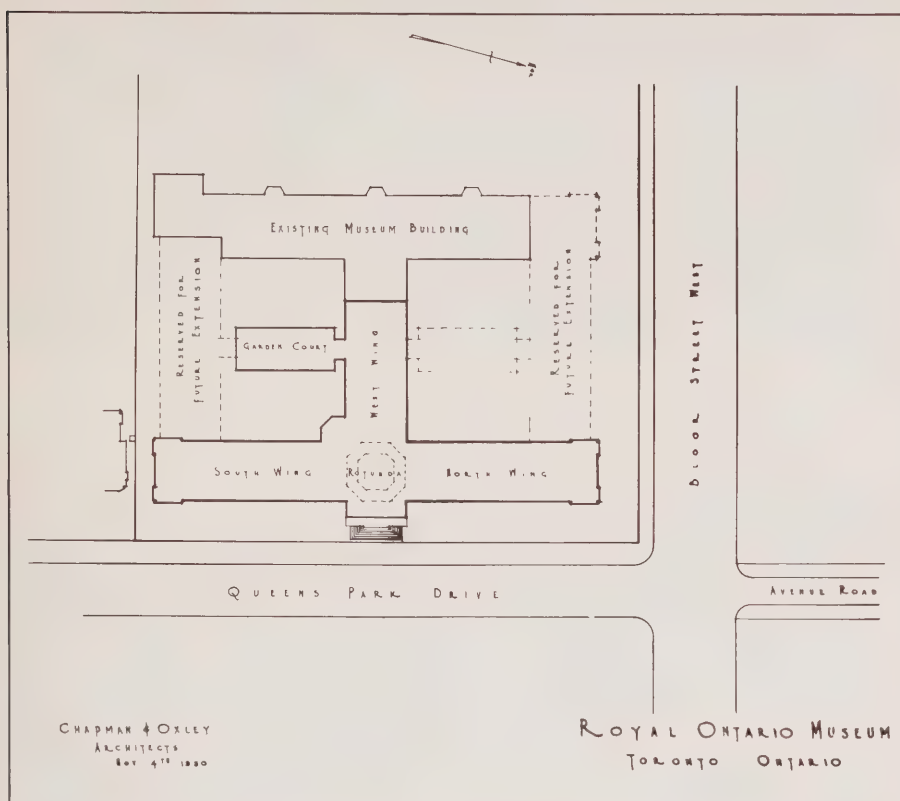
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Left: Dated 4 November 1930, the architects' drawing shows the plan for expansion. The broken lines indicate future expansion as it was foreseen at that time.

alogy to palaeontology and on to zoology. Archaeology was seen as a stumbling block (except by Professor Currelly) because of its need for relatively large spaces and perhaps also its undeniable popularity. Another problem was the supposed impossibility of moving the huge but fragile dinosaurs that Dr. W. A. Parks had been setting up in the palaeontology gallery at the far end of the top floor.

Suggestions continued to flow in to Mr. O'Brien during the next few years. Most of the themes were repeated fifty years later when space restrictions were becoming intolerable once again. This is not to be wondered at since it is part of the very nature of a living museum to grow in all its parts. In *A Preliminary Statement Concerning the Needs of the Royal Ontario Museum of Zoology in Relation to the New Bloor Street Extension*, the director, Professor B. A. Bensley, covered the field in a few words:

It is essential to get away from the idea that the Museum consists solely or even mainly of a lay-out of space from an exhibition point of view and to realize (1) that extensive provision must be made for office, workroom and storage purposes, (2) that there must be tangible facilities for public instruction in the way of lecture amphitheatre and classrooms, (3) that gallery exhibition requirements as regards lighting, heating and wiring should be studied before and not after the final plans are drawn.

This was in June 1928. Bensley went on to give detailed estimates of space requirements for the Museum of Zoology for expansion during the next ten years or so.

Meanwhile the collections continued to increase and behind-the-scenes activities became more and more congested. In the public galleries, display cases had to be pushed close together and visitor traffic jams began to reach alarming proportions in the inadequate aisles. At last, barely fifteen years after the opening of the first wing, architects were appointed to start planning a major addition.



Above: A rendering of the main entrance made when the architectural design was settled but before the sculptural ornament had been modelled. (Drawing by G. K. Pokorny)



Right: The spires of Victoria College almost disappear in this series of progressive construction photographs dated (from top): 1 November 1930, 15 April 1931, 10 July 1931, and 18 November 1931. In the final photo, the join between the 1914 “stub” and the 1931 central spine can be seen at the right.



ROM ARCHIVES



Above: One of the two totem poles that still grace the ROM's stairwells as the building goes up around it.



ROM ARCHIVES



ROM ARCHIVES

ROM ARCHIVES



ROM ARCHIVES



The new building was entrusted to the architectural firm of Chapman and Oxley. Alfred H. Chapman could be called the designing partner and J. Morrow Oxley the calculating partner in the firm. Chapman had studied at the Beaux Arts in Paris and had won early recognition with his winning design for the Toronto Public Library at College and St. George streets. He combined the firm discipline of axial planning he gained at the Beaux Arts with a refined taste in decoration and the allied arts. Oxley's early training had been as a structural engineer, but he had broadened his scope to cover all aspects of construction and building economics.

The architects accepted the basic plan established by Darling and Pearson (or Sir Aston Webb), but instead of completing a Bloor Street frontage, they pushed eastward a central spine from the stub that was already there and adopted an H-shaped layout for immediate construction. The closure of the open courts north and south of the connecting bar was left for future expansion.

We have become so accustomed to the relative positions of the five museums, which later became departments, that it is easy to forget how skilfully the sometimes conflicting claims and wishes of the directors were met in the new plan. The four natural history museums were all placed in the new building on Avenue Road, but each one could be reached directly from the main entrance without going through any of the others. The basic earth sciences, geology and mineralogy, faced each other across the rotunda on the main floor. The second floor, given over entirely to vertebrate and invertebrate palaeontology, was a natural link between the earth sciences and the contemporary life forms in biology, which received the whole top floor. This convenient arrangement symbolized in a broad way the stratification of *The Record of Nature Through Countless Ages*. For *The Arts of Man Through All the Years*, archaeology retained its former space on the main and second floors of the old west wing, to which were added the galleries vacated by the natural history museums and almost all the new space in the connecting bar between the east and west wings. The basements were mostly used for receiving, unpacking, storage, and preparation, except for the ethnology galleries in the bar. Offices and libraries for each museum were provided at the ends of the wings contiguous with the galleries. A lecture theatre and tearoom were new amenities that had long been wanted.

One of Currelly's requests had been for a so-called garden court to be built at ground level to display the Chinese tomb and attendant figures, which had been languishing in packing cases for several years. This was built to the south of the connecting bar. It eventually became the scene of several notable special exhibitions after the Chinese carvings had once again been banished to the inhospitable north court.

The decision to continue the original basic gallery layout and building formula was made after much study of newer museums on this continent and much weighing of the merits of natural versus artificial light. The use of entirely artificial light was eventually rejected because of the high cost of energy. Air-conditioning was still little understood at that time. The simple structural system was modified to span the full width of the buildings for the armour court on the main floor of the bar and the biology galleries on the top floor of the new wing.

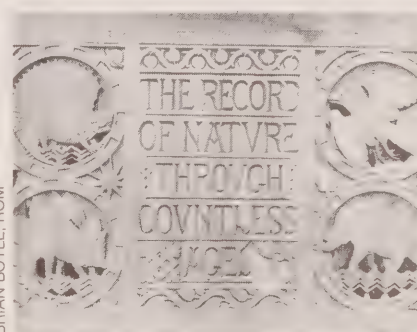
There was no attempt to emulate the classic pomp of the British Museum in London or the Metropolitan in New York, which had been imitated on a reduced scale in many recent American buildings. But once inside the entrance doors, the visitor was tempted to explore a magnificent vista through the domed rotunda, the shallow-arched armour court, and the width of the old building to wrought-iron filigree silhouetted against a large west window. Architectural style, then as now, was frequently defined by decoration or its absence, linked to bygone centuries or the latest glossy magazines. By 1928 historical eclecticism was weakening, but it was still normal to dress banks in classic orders, churches and colleges in Gothic tracery, and houses in Tudor half-timber or Georgian brick, with occasional eccentricities like a classic church or a Georgian college.

The late 19th-century Richardson Romanesque of the City Hall, the Parlia-

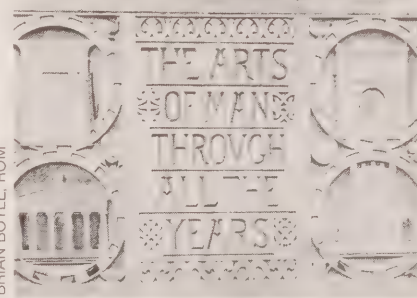


ROM ARCHIVES

Above: Finishing touches to the original oak doors at the main entrance.



BRIAN BOYLE, ROM



BRIAN BOYLE, ROM

Above: The mottoes that flank the main entrance to the ROM.





ROM ARCHIVES

Above: Finishing the roof.

Right: A page from *Saturday Night* dated 15 July 1933. (Courtesy of *Saturday Night*) The text reads:

*The technique of museum showmanship has made immense strides in the last few years, and the Royal Ontario Museum embodies every device for making exhibits more interesting and instructive. Almost all of the new exhibition halls are now open to the public.*

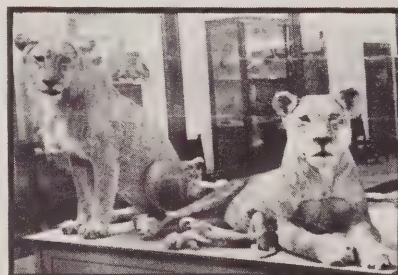
The pictures in the top row show exhibits in the Zoological Section.

The middle picture in the second row is from the same section, and shows an exceptionally lifelike posing and grouping of grown lions and very young cubs.

The other second row pictures show the beautiful architecture of the main entrance hall and its stairways, the one on the left giving a glimpse of the top of the totem pole which is set up in the staircase well.

Bottom left, the Chinese funerary monuments, probably the finest exhibit of this kind of art in the world. Bottom right, "Venus the Mother" at the entry to the hall of ancient sculpture, pottery and armor.

—Leica Camera Studies by "Jay", exclusive to *Saturday Night*. Copyright.



The pictures in the top row show exhibits in the Zoological Section. The middle picture in the second row is from the same section, and shows an exceptionally lifelike posing and grouping of grown lions and very young cubs. The other second row pictures show the beautiful architecture of the main entrance hall and its stairways, the one on the left giving a glimpse of the top of the totem pole which is set up in the staircase well. Bottom left, the Chinese funerary monuments, probably the finest exhibit of this kind of art in the world. Bottom right, "Venus the Mother" at the entry to the hall of ancient sculpture, pottery and armor.



ment Building, and Victoria College had been out of fashion for at least thirty years. The design of the Museum picks up an earlier and simpler precedent found in University College and the old main library of the University. The restrained carved decoration is Romanesque in feeling but was all specially designed without heavy borrowing from historical models.

When the basic plan and massing had been determined, the design was refined sculpturally. A large clay model was built in the sculptor's studio and studied and altered under the architects' direction until a satisfactory result had been obtained. The damp clay made it easy to revise proportions without wasted time and effort.

Charles McKechnie, the sculptor, had done a great deal of architectural modelling for Chapman and Oxley. His best-known work still standing is the angel and other figures on the Princes' Gate at the Canadian National Exhibition. He modelled all the carved stonework for the Museum at full size in clay. His studio was a place of enchantment where huge gobs of shapeless clay were pummelled and worried and sliced for a few minutes until beautiful forms emerged as if by magic, often to be destroyed and reshaped closer to the vision in the sculptor's mind's eye. Plaster casts were made of the clay models and set up on the scaffolding for the stone carvers to copy.

It was almost a paradox that while the museums had suffered an increasing shortage of space through the boom years of the 1920s, the Great Depression following the stock-market crash of 1929 hastened the construction of the new building. By 1930 unemployment was already a serious problem. The provincial government required that, as far as possible, local materials and labour should be used in the construction. The exterior walls of the new wing were faced on the north, south, and east sides with Credit Valley and Queenston





limestone. The walls facing what it was hoped would eventually become inner courts were Toronto brick to match the walls of the old west wing. Marble quarries at Bancroft were reopened to supply all the decorative marble flooring and trim inside the building. Connolly Marble Mosaic and Tile, still well known in construction circles, made and installed the mosaic ceiling in the rotunda. A small army of skilled tradesmen was employed on the carpentry, metalwork, piping, and wiring of the new building. Nor were the unskilled labourers forgotten; the excavation was all done with pick and shovel, using horse-drawn wagons.

Construction began in 1931. The anxieties and frustrations that the Museum has suffered through the last couple of years were foreshadowed on a smaller scale as the building progressed. Among schoolboy recollections of those years, two stand out clearly, although they may have had only incidental importance to the men responsible for the myriad details of the building process and the care and relocation of the valuable collections. The huge totem poles now circled by the main stairs had lain for several years beside the old building. They had to be unswaddled, erected, and guyed in their final location before the building went up around them. The dinosaurs, which had been thought at one time to anchor vertebrate palaeontology to the top floor of the west wing, were successfully moved to the second floor of the east wing, intact and undamaged. The new building was ready for an official opening in October 1933, although a few galleries had already been opened to the public by the end of the previous year. Alterations and renovations to the old building were completed in 1934.

A tradition of princely gifts had been established at the beginning by Sir Edmund Walker, Sir Edmund Osler, Mr. and Mrs. H. D. Warren, and others. During the forty years that followed the opening of the new wings in 1933–34, the tradition was carried on by Dr. Sigmund Samuel with the Canadiana galleries and by Col. Sam McLaughlin with the Planetarium. There were few changes to the fabric of the main building except a small office addition at the southwest corner. And meanwhile the inexorable pressures of space needs were building up as never before. Exhibition space had to be whittled down for curatorial necessities and the increasing crowds of visitors could be shown less and less of the ever-growing collections. At last, after fifty years, it became possible to think seriously about major additions that could relieve most of the pressures on space and incorporate the advances of half a century of building technology. But that is another story . . . .@

Above: The completed wing before the elm trees were cut down and the street widened.

Loren Oxley is a son of the late J. Morrow Oxley, one of the architects of the 1932 addition to the Museum. He studied architecture at the University of Toronto and Columbia University. He is a Bachelor of Architecture and a Fellow of the Royal Architectural Institute of Canada. His affection for the ROM began with his first visit as a child. He has been a life member for many years.

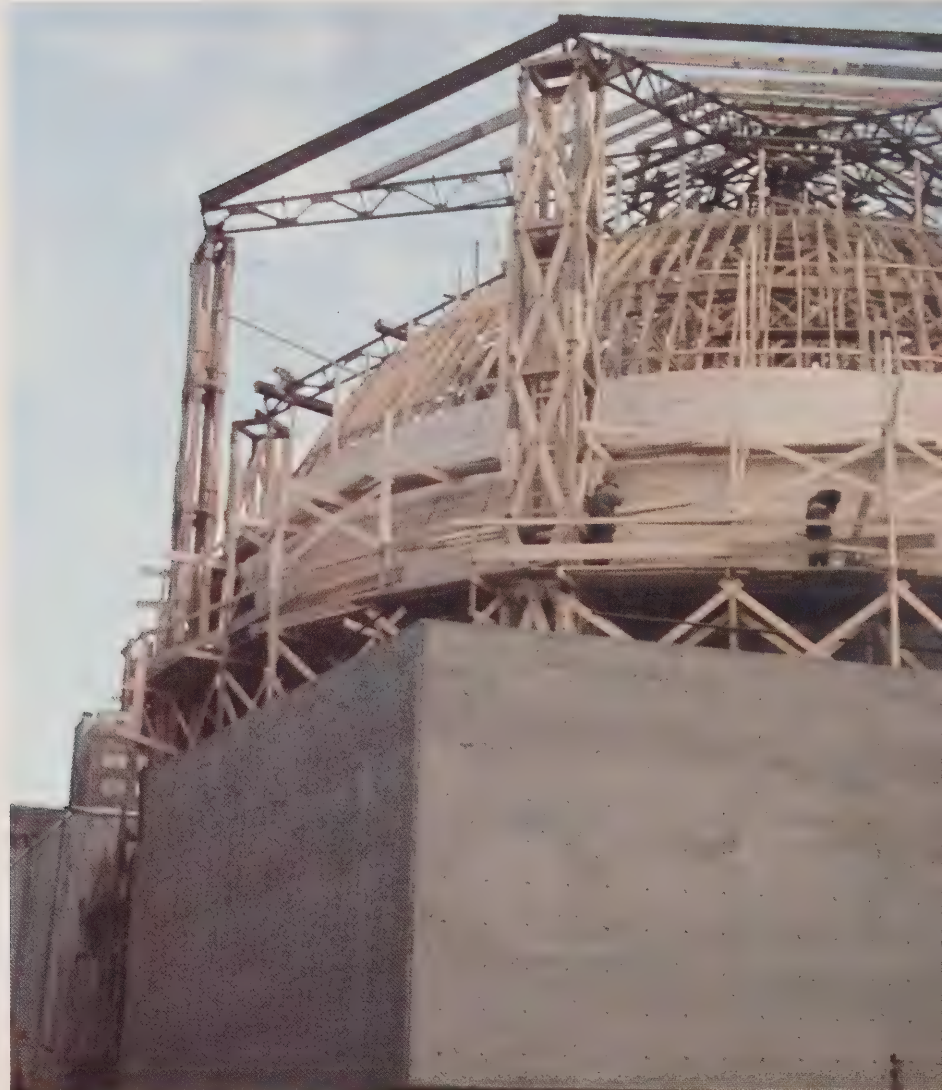


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# Stars on the Ceiling

*The Space Age comes to the ROM*

Thomas Clarke



Right: The construction of the outer dome of the Planetarium, January 1968. The frame of the dome is being sheathed with plywood onto which concrete was sprayed. So that the spraying could continue in winter, a plastic tent was added to the outermost framework.



The half-century that separated the two great expansions of the Royal Ontario Museum saw a major addition to the institution in the form of the McLaughlin Planetarium, officially opened on 26 October 1968. At that time no one could foresee that within ten years the Planetarium would be significantly altered by the second Museum expansion.

Opening day in 1968 brought to completion a project started in 1944 when Dr. C. A. Chant of the University of Toronto sought advice on a planetarium for Toronto. But it was not until fifteen years later that a planetarium was included in an informal ROM "want list" and acquired a champion in the late Dr. V. B. Meen of the Department of Mineralogy, whose interest and efforts were crucial to the successful completion of the project. Unfortunately, the University's priorities for building slowed the project until 1964. Then events started to move very quickly.

On 1 October 1964 a proposal for "A Planetarium for the University of Toronto" was submitted to the president of the University. Col. R. S. McLaughlin heard of the University's interest, and wrote to Dr. W. E. Swinton, then director of the ROM, on 27 November 1964 with an offer to fund the project. In return he asked only two things: that the building be known as the McLaughlin Planetarium, and that everything be "of the highest order and first class in every way". The original Planetarium cost approximately \$2 250 000, and to ensure that it could continue to develop and improve, Col. McLaughlin very wisely provided a substantial endowment.

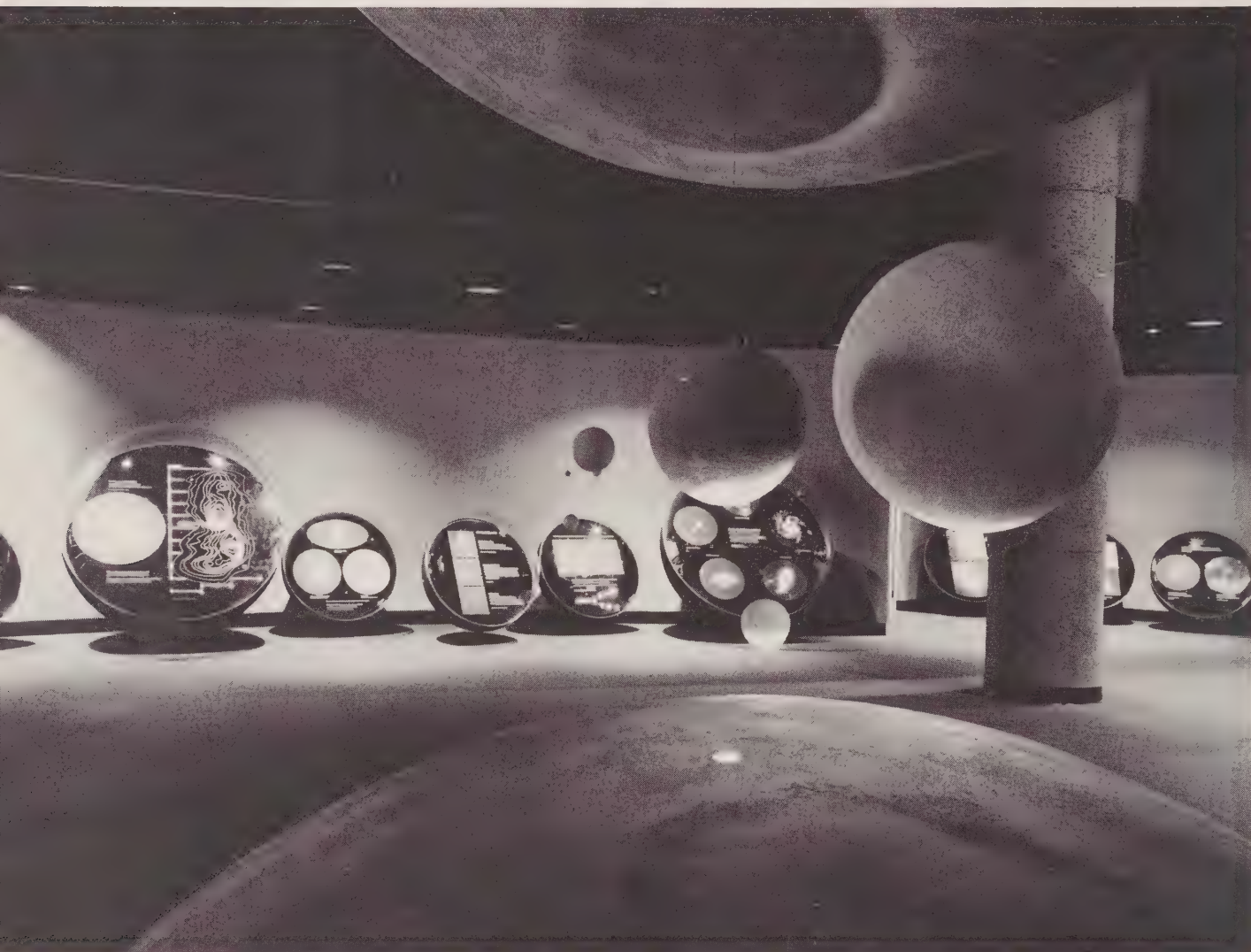


Above: The site of the future McLaughlin Planetarium in December 1965, shortly before construction began.



Above: The demolition of the Planetarium north wing in the summer of 1978 exposes the circular staircase that once linked the display and theatre levels.





LEIGHTON WARREN

Above: A small part of the Hall of the Spheres in the display area that was dismantled to make room for the Curatorial Centre.

Right: In the southeast corner of the Curatorial Centre, a new circular staircase carries visitors to the Star Theatre.



CHRIS SASAKI, ROM



With the funding in hand the University provided the land by demolishing the building at 86 Queen's Park, the Blood and Vascular Disease Research Unit. In the initial planning designs the Planetarium was to be in the south courtyard of the Museum building, now occupied by the Curatorial Centre; the plans included a multidecked parking garage and a 550-seat movie theatre. The architectural style of the building was to be "appropriate to the subject as a science and in relation to man's modern activities in space". Perhaps fortunately for the future expansion of the Museum, these plans were too costly and the University administration insisted that the project be scaled down. In a pattern all too familiar to current ROM builders, out went the parking, the tunnel to the subway, the refrigeration plant, and provision for the future development of the site, which might have included the removal of Falconer Hall to the south.

Over the past ten years the McLaughlin Endowment has been used to improve the Star Theatre, in particular its recording and sound systems, projection equipment, and automatic control of slide projectors. Once presented live in a lecture format, public shows are now fully taped with highly sophisticated audiovisual effects. These improvements continue with plans for further automation and for a hoist to lower the Zeiss projector out of sight to permit the use of the theatre for wide-angle projection and other activities.

The initial planning for the ROM's renovation and expansion project assumed that the Planetarium would be untouched; consequently, the Planetarium's involvement in the project came rather suddenly. The north wing, or annex, of the building was demolished to clear the whole of the south courtyard for the Curatorial Centre; this meant the loss of the workshop, sound studio, theatre entrance, passenger elevator, and about one-third of the display area. The remaining gallery, often reported to be the finest astronomical display in North America, was removed in March 1978 to accommodate temporary replacements for the lost workshop and studio. Nevertheless, the Planetarium maintained an almost normal level in its public operations throughout the ensuing four years of expansion, despite the seeming state of siege, with floors vibrating to the wrecking company's hammers, electrical power unexpectedly disrupted, and water lines crumbling under the pounding of truck wheels.

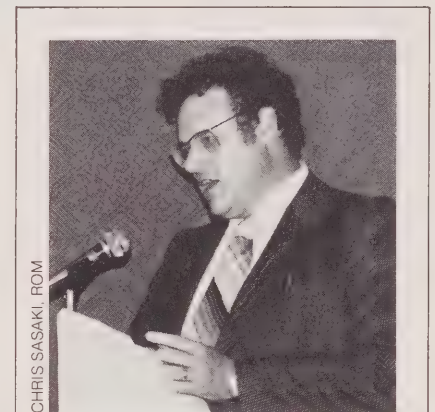
The renovation and expansion project has, however, presented an unexpected opportunity to make changes in a relatively new structure and to correct some matters overlooked in the original building. Staff work areas, which had been scattered over five levels in two separate sections of the old building, are now consolidated on the second level of the Curatorial Centre; thus the close cooperation necessary for the production of shows is now encouraged rather than frustrated by the physical layout. Renovation of the vacated spaces within the Planetarium has created a large open gallery area on the second floor and additional space for managerial and ushering staff at the entrance level. A beautiful new circular staircase provides shorter and improved public access to the Star Theatre. An adjacent elevator for the elderly and the handicapped is conveniently close to the ramp in the southeast atrium connecting the Planetarium to the Museum entrance area.

The renovation and expansion project has affected almost every part of the Planetarium. Although the level of services to the public was maintained, attendance declined markedly after the ROM closed. School groups that could justify a field trip combining ROM galleries and a Planetarium show now stayed away. To many people the hoarding in front of the Planetarium gave the impression that it too was closed. In square metres the Planetarium has neither gained nor lost significantly, but in the consolidation of work areas and the creation of a large display area it has improved its situation immeasurably for the future.®



M. GIOVINAZZO

Above: Hoarding concealed the construction yard in the Planetarium plaza.



CHRIS SASAKI, ROM

Dr. Thomas R. Clarke, head of the McLaughlin Planetarium, joined the original staff of the Planetarium in 1968 as an assistant curator and soon afterward completed his graduate work at the University of Toronto in radio astronomy. A writer and producer of more than fifteen Planetarium shows, Tom finds that since he became head of the Planetarium in 1976 he has been more heavily occupied by administrative matters. But having seen the building of the Planetarium and its galleries, then overseen their partial demolition and the renovation of the building, he looks forward to the challenges of creating new galleries and running a renewed planetarium facility.







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# Museums Are for People

## *The evolution of a design concept*

Gene Kinoshita

My involvement with the Royal Ontario Museum began in 1970 when our firm, Moffat Moffat & Kinoshita, was engaged by the Museum to carry out an expansion feasibility study. Four years later we were selected, along with Mathers and Haldenby, as associated architects for the ROM's renovation and expansion project. I was appointed design architect and in this capacity I prepared a statement on design objectives in which I said:

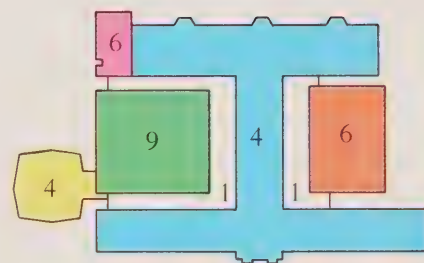
In order to design any beautiful, imaginative building, a great deal of architectural ingenuity and study is always required. "Good" architecture is not the result of intuitive perception nor of preconceptions, but of careful analysis and synthesis of a well-prepared programme with well-defined goals and objectives of the institution.

The goals and objectives of the institution were defined in the Museum's *Statement of Intent* of September 1975, and early in the following year we were ready to proceed with the conceptual design.

From the very beginning I was greatly overwhelmed by the complexity of the problems that faced the architect. But even then it was clear that the most important criterion in assessing a design must be its success in solving the problem of "spatial identity" for people. This means that staff members of the Museum and visitors must have a clear understanding of where they are and a clear sense of orientation; they must not feel lost or bewildered. If the architect did not keep this requirement continually in the forefront of his mind, a building of the ROM's vast size could easily make the people using it feel lost, uncomfortable, puzzled, or mentally exhausted.

It was decided from the outset that the existing H-shaped building, consisting of the 1912 west wing, the 1932 east wing, and the connecting link (the centre block, also built in 1932) must not be demolished. This building already contained nearly 27 000 m<sup>2</sup> of floor area. The expansion plans called for a further 36 000 m<sup>2</sup>, making a total of 63 000 m<sup>2</sup>. The very size of the floor area that had somehow to be contained on a small site with some quite restrictive features made it evident that the matter of orientation was of paramount importance. The discovery of an appropriate solution involved quite a struggle; but when found it turned out to be the solution not only to our main problem but to several others as well.

This solution was to construct new buildings within the two open courtyard



Above: The various floor levels in the existing and new buildings that had to be made compatible.

Opposite page, top: April 1976 proposal. The earliest conceptual design for the north courtyard was a glass façade bridging the two existing wings. This glass link preserved the integrity of the various styles of architecture, yet unified the whole into a single coherent expression. The scale and impact of the addition was reduced because the façade was a negative transparent form and became a large glass display case. However, after being put to various tests and analyses, this concept was found to be inappropriate for the type of display techniques to be used in the galleries.

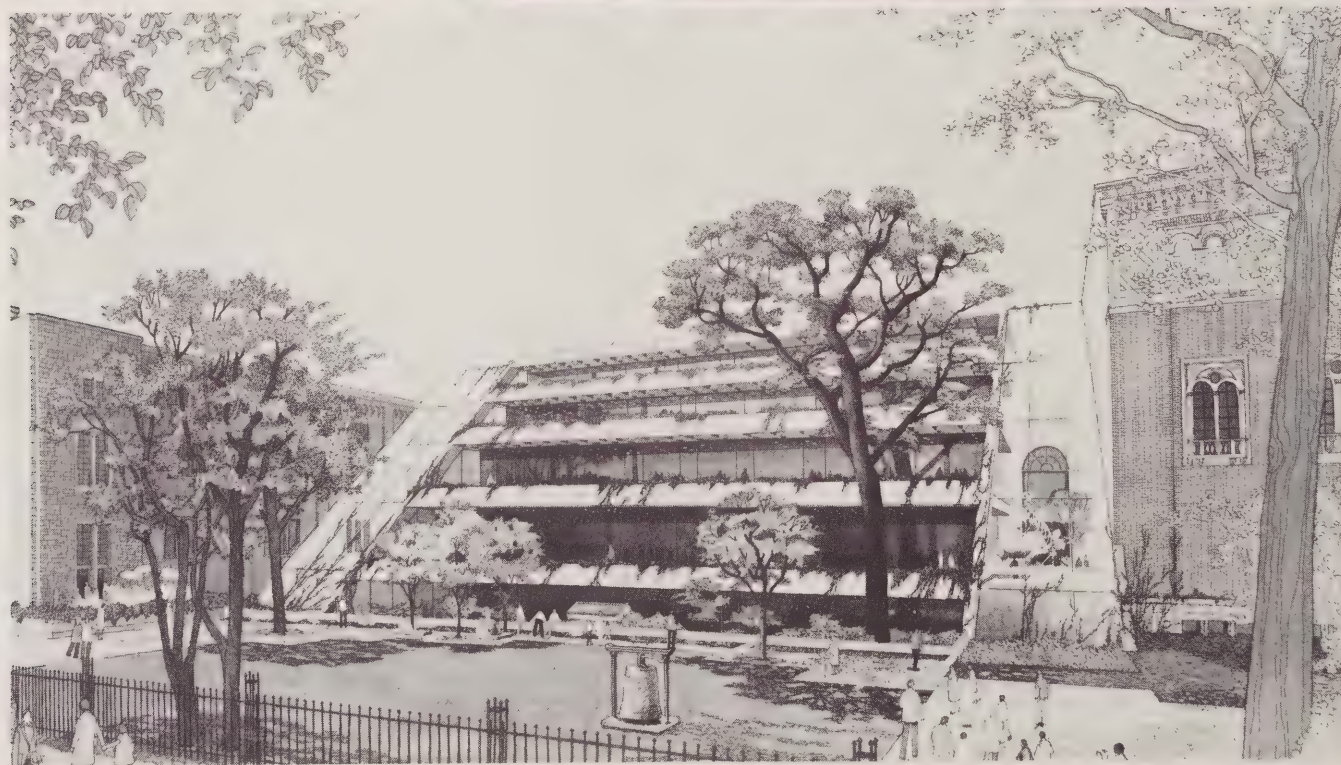
Opposite page, bottom: Final design. This artist's view of the interior of the north atrium, looking from the connecting bridge between the centre block and the new Terrace Galleries, shows the concern for retaining the rich façades of the existing buildings.



Right and below: Spring 1977 proposal. The beginnings of the terraced-gallery concept. This concept, with an atrium and terraced floors joining the façades of the existing buildings, consisted of bold, diagonally sloped glass. The Ming Tomb complex needed a proper home; in this proposal it was to be located in a sunken landscaped garden that, while ensuring security, would enable it to be seen from the park on Bloor Street. After the sketches were completed, the architects reconsidered this solution and the design process began again.

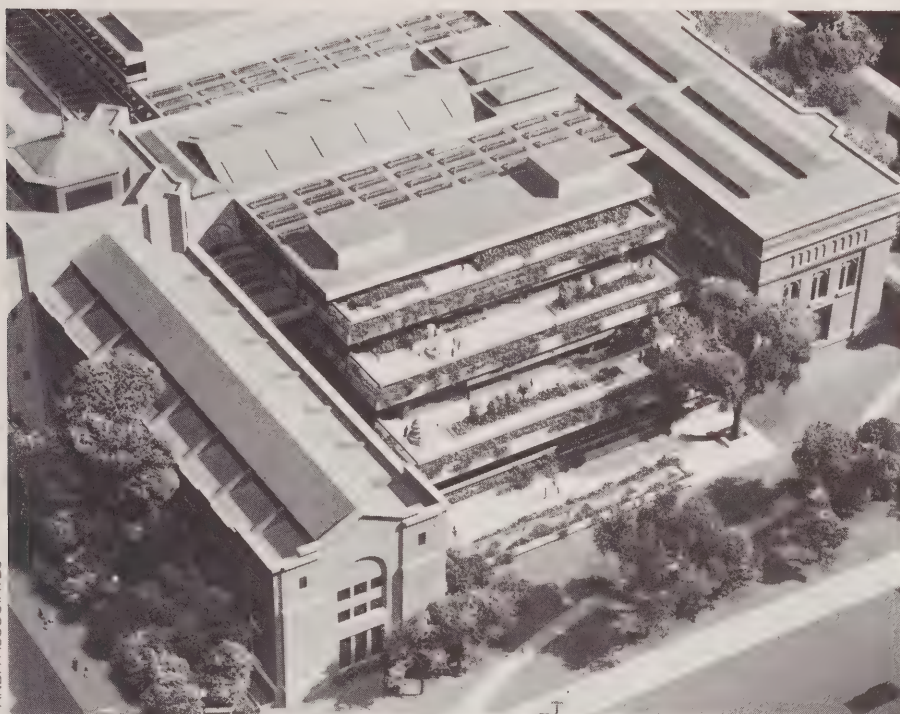


PANDA ASSOCIATES



MICHAEL McCANN





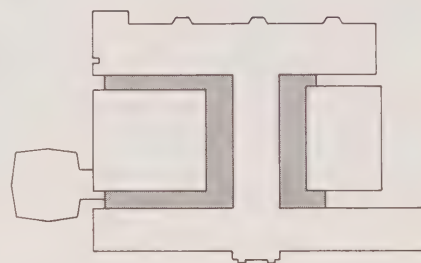
Left: October 1977 proposal. The Ming Tomb complex underwent various location changes in the two-year design period. This proposal shows an underground, skylighted location in front of the Terrace Galleries.

formed by the existing H-shaped building. These were to be separated from the existing building by multistoreyed skylighted perimeter wells or "atria". This plan left the existing, historical, H-shaped building intact, and allowed for the return to their original use as public galleries of all those areas that had been encroached upon for other purposes over the years. The atria would provide the space and environment for orientation and rest, and also a very important transition space for reorientation and a change of perspective.

Another very important problem to be solved was that of "museum fatigue". We have all experienced the exhaustion brought on by walking through museums and art galleries looking at seemingly unending series of exhibits and displays. The two U-shaped atria are designed as spaces where people can obtain visual and psychological relief from this fatigue. In moving from one gallery to another through these spaces, visitors will experience changes in space and light conditions, views, vistas, and even humidity and temperature. The result should be relief from museum fatigue through mental and physical relaxation.

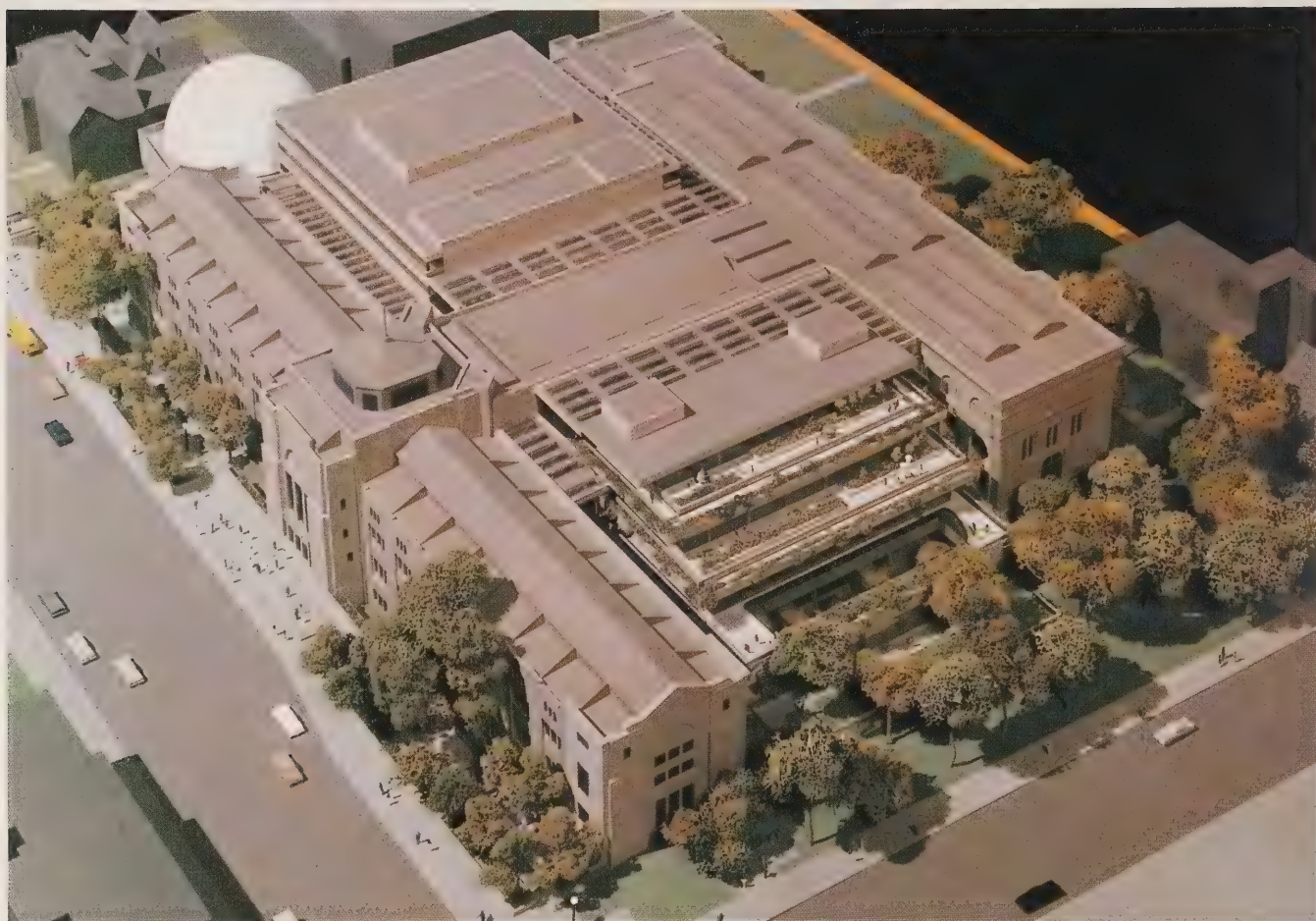
It is important to me that new buildings should be harmonious with existing ones and yet should interpret and reflect their own times rather than times past. Thus considerable thought was given to the visual and functional problems presented by the juxtaposition of the Museum's new and old buildings. Once the appropriate design concept had been found, many of the other problems seemed to solve themselves and to be merely a matter of working out details. This concept had to be one that resolved all the complex technical problems of humidity, temperature, ultraviolet light control, security, fire safety, fumigation, and waterproofing, along with the problems of access, circulation, compacted storage systems, and shipping and receiving facilities. However, it also had to provide a human environment that would satisfy both the physical and psychological needs of the people using the Museum.

The multistoreyed atrium serves other purposes also. Because of various and complex differences of floor level between the existing building and the new buildings occupying the former courtyards, the atrium has been used as a space for adjusting the floor levels. For example, on one floor we encountered six different levels—differences which had to be overcome in order to provide access for carts and wheelchairs. The necessary adjustments were accomplished by such means as bridges, ramps, stairs, and dual-door elevators in the atrium space.



The atrium concept.





PANDA ASSOCIATES

Above and opposite page, top: Final design. The landscaped, terraced floors act as an extension of the existing garden. The scale and impact of the addition are reduced by the receding stepped structure and softened by the landscaping of the terraces. The Ming Tomb complex is now boldly displayed and safely housed on Level 1 of the Terrace Galleries. Environmentally controlled, skylighted, and fully glazed along the north façade, it is visible both day and night to passers-by.

Natural light is an important design element because it has a mystical, ever-changing quality, giving life to spaces by its varying volumetric effects and subtle shifts of mood. The atria permit natural light to penetrate deeply to public and nonpublic areas which otherwise would be enclosed, windowless spaces.

The decision to place the new buildings in the spaces between the arms of the H-shaped building resulted in substantial energy savings, since the perimeter walls of the existing building now became interior walls. Before the expansion and renovation project, the ratio of exterior wall surface to the total floor area was as much as 60 per cent. In the new Museum, with 63 000 m<sup>2</sup> of floor area, the ratio has been reduced to 21 per cent. The savings in energy costs are obviously considerable.

Before the renovation, there were no environmental controls in the Museum. The importance of temperature and humidity controls in museum buildings needs no emphasizing; nor do the ill effects of air pollutants, especially sulphur dioxide and dust, on our public treasures. The formidable problem of high humidity in the existing structure has been somewhat alleviated by the atrium concept and the filling in of the courtyards. The atrium serves as an environmental buffer zone between the highly controlled temperature and humidity zones of the Curatorial Centre (the new building in the south courtyard) and the less controlled areas of the older buildings. In order that the exterior fabric of the building should not be damaged by high levels of humidity, the decision had to be made to reduce the relative humidity in the older buildings to 25 per cent during the winter months. Any artifacts requiring tighter humidity controls or higher humidity levels will be housed in separate environmentally controlled cases or rooms.

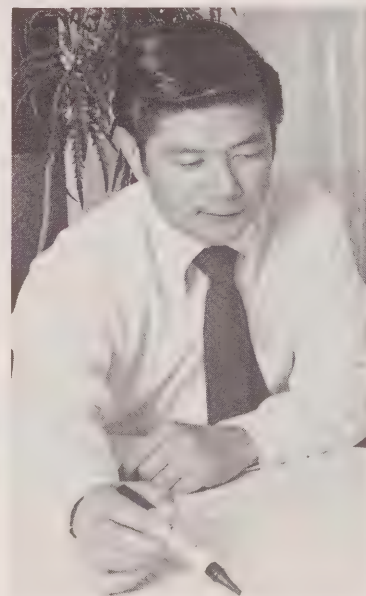
For galleries and exhibitions I wanted to create spaces that would enhance the visitor's appreciation of works of art without upstaging them. For this pur-





pose I provided a variety of gallery spaces suitable for different kinds of exhibitions and displays. The design of the displays is the responsibility of the Museum's Exhibit Design Services Department; my hope is that the variety, quality and the quantity of gallery spaces provided will allow that department to do imaginative things for the enjoyment and education of the public.

It is not often that an architect is given the opportunity to work on a project of this scale and complexity. The problem of marrying new structures to older buildings of varying periods and styles becomes even more challenging when the existing building is as important as the ROM. My objective throughout has been to make the expanded Museum a place that the people of Ontario and the world will visit and revisit, and where they will receive lasting and loving images and experiences through its displays, its collections, its spatial experiences, and its architecture. Only time will tell. ©



Since 1974 Gene Kinoshita has been the partner in charge of design of the associated architects for the ROM's renovation and expansion project (Mathers and Haldenby/Moffat Moffat & Kinoshita). His involvement with the physical planning of the ROM began in 1970 with an expansion feasibility study. Born in Vancouver, he graduated with a B.Arch. (Honours) from the University of British Columbia in 1959 and in 1962 received his M.Arch. from Yale University. In 1965 with Don Moffat, he formed Moffat Moffat & Kinoshita (now The Moffat Kinoshita Partnership), Architects and Planners. He is extensively involved in the conceptual design and planning of all his firm's projects. He has won many architectural awards for a variety of work, including residential, institutional, cultural, commercial, and industrial projects. He is an Academician of the Royal Canadian Academy of the Arts, and a Fellow of the Royal Architectural Institute of Canada.

Left, centre: A view of the old and the new: the main building and the Curatorial Centre are linked by bridges.



## The Cluster Concept

Robert Barnett

Exhibit Programming Coordinator

Exhibit Design Services

At a conference entitled "2001: The Museum and the Canadian Public", Kenneth Robinson of the United Steelworkers made two very valid observations about traditional museums:

Museums, to me, with some notable exceptions, have always been mysterious huge stone buildings which usually smell a bit musty and make you feel like speaking in whispers, as if life was not allowed in a place of dead things . . .

You can present an hour-long television documentary on Masada with more in-depth learning and entertainment value than you can by charging somebody \$1.00 to tramp around some old building trying to figure out what you're seeing from a handbook written by an academic who has spent his life learning about one subject and assumes everyone else has the same grasp of it as he has.

The frustrations Mr. Robinson felt have been experienced by many visitors to museums. The result has been a relatively low rate of repeat visits and perhaps a negative attitude to some aspects of museums in general. An institution like the ROM serves a clientele ranging from children to senior citizens, from high-school dropouts to professional scholars. Every one of its visitors has a right to expect to find the Museum a worthwhile personal experience.

In 1976 the Museum published *Communicating with the Museum Visitor*, an exhaustive study of what a museum should be and how it should function, with suggestions as to how the ROM itself might develop. In 1978 the concepts set out in *Communicating with the Museum Visitor* were followed up in *Mankind Discovering*, a master plan for the Museum's development to 1997.

At the heart of *Mankind Discovering* is the recognition that when people visit a museum they want to learn, and that our job as museologists is to provide the maximum both of learning opportunities and of enjoyment for our visitors. To accomplish this, we need the latest information on how people use museums and their galleries, how they look at displays, how they learn by non-directed study, what they are interested in, and how "visitor fatigue" can be minimized.

*Mankind Discovering* and *Communicating with the Museum Visitor* helped us to identify some of the problems people have with traditional museums and suggested ways of solving them. The first steps were taken when it was decided that in the development of display space during the expansion/renovation project, the "clustering" of galleries should be a primary consideration.

A cluster is simply an arrangement of related collections, and therefore of galleries. "Galleries, as a totality, represented networks of interrelated concepts

| Cluster                            | Old Galleries   |
|------------------------------------|---|
| New World                          | Ethnology, New World Archaeology  |
| Far East                           | The arts of India, Korea, Japan, China, and Southeast Asia, Textiles  |
| Earth Sciences                     | Mineralogy, Geology   |
| Life and Palaeontological Sciences | Botany (new), Arthropods, Invertebrate Zoology (new), Reptiles, Fishes, Mammals, Birds, Dinosaurs, Invertebrate Fossils |
| Mediterranean World                | Mesopotamia, Egypt, Greece, Rome, Near East, Roman Britain, Textiles  |
| European                           | European, Textiles  |
| Canadiana                          | Canadiana   |
| Mankind Discovering (new)          |   |



## GALLERY GLIMPSES

rather than isolated ideas" (*Mankind Discovering*, p. 17). The plans for the new Museum envisaged eight such clusters.

Clustering constitutes a major departure from the traditional arrangement in which each department has its own gallery—conceived, designed, and located independently of all others. In the old arrangement at the ROM, the story of life on earth began in the palaeontology department on the second floor and continued in the life sciences galleries on the third floor. The history of Western civilization began in the middle of the ancient world galleries on the second floor but never met the other end of the story, the European galleries on the first floor. The cluster concept means that eventually the visitor will enter the ancient world at the beginning of the story of Western civilization, proceed through its chapters, then through a transition that carries the story into medieval Europe, and finally down to our own time: from cave man to art nouveau—all on the third floor, one story with many chapters, themes, and plots.

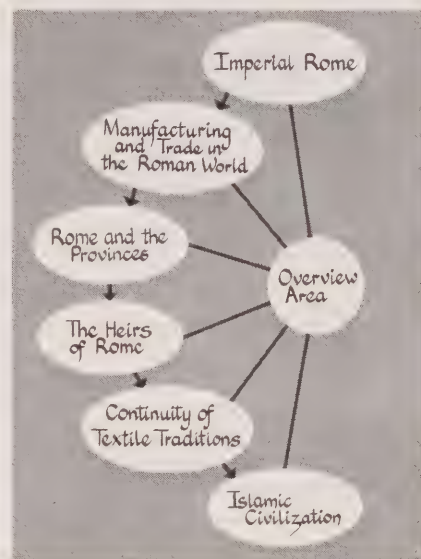
Each cluster has an introductory area where basic concepts, theories, historical sequences, and background ideas are discussed. In many of these areas there is seating; sometimes there is an audiovisual programme. The sequence of galleries within a cluster is explained in a "user's panel" at the entrance to each cluster, and reinforced by other panels at the beginning of some of its galleries. The user's panel explains by means of text and graphics the physical and conceptual layout of the cluster or gallery. It may also pose questions to stimulate a sequence of ideas; or it may provide a short reading list for those who wish to pursue the subject in greater depth at their leisure.

In some clusters there are overview areas that relate subjects from several galleries within the cluster to specific common themes such as trade or town planning. These overview areas are part of the "levelling" pattern used throughout all the galleries in the Museum.

Clustering allows visitors to make the most of their time in the Museum by following up particular themes that are of special interest to them. Levelling—a term used simply to denote the presentation of information at different levels—enables visitors to exercise similar preferences within the individual clusters or galleries. The levels proceed from the general to the more specific, the process being indicated by decreasing sizes of type or by colour coding of the text panels.

Upon entering the Mediterranean world cluster, for example, the visitor will encounter first the orientation/user's panel, which enables him to orient himself not only within the building but also within the historical periods and the geographical regions to which the cluster refers. The panel also suggests a path through the cluster and identifies the sequence of galleries, giving their titles and the concepts that they illustrate. At the entrance to each gallery another panel, by means of text and graphics, enlarges upon these concepts. Whether the visitor chooses to view the Imperial Roman busts or the coins, or perhaps to trace the rise of the state, he will have available a general introduction to the subject, a more detailed survey of groups of artifacts, and a series of individual artifact labels—that is, different levels of information.

The clusters and galleries of the new Museum have been developed by teams of specialists: curators, designers, programmers, educators, and conservators. Each cluster, and sometimes each gallery, has its own team that works as a unit to determine the themes and subthemes of the cluster or gallery and to link them together in a coherent storyline. It must then develop each element of a gallery, whether a case, a group of cases, or a mini-theatre, until it tells the required story. The final stage in the process of development is evaluation. The team's work is not complete until it knows how visitors respond to the exhibit and is satisfied that the purpose of the exhibit has been understood. Whenever possible, the teams have tried to test new ideas; but with the Museum closed, testing has not always been easy. When the new Museum opens, therefore, we shall be asking visitors to help us to evaluate not only the newly opened galleries but also—by means of mock-ups—those still under development. Our visitors are the reason for our huge investment of time and money; it is they who must help us judge our work, so that we can better serve their needs.



Above: A schematic representation of part of the Mediterranean world cluster of galleries.



## The Gallery of Evolution

Allan J. Baker  
Curator in Charge  
Department of Ornithology

Where can you go to see the actual evidence for the theory of evolution, evaluate it, and make up your own mind about the current debate between scientific creationists and evolutionists? Strangely, the answer seems to be "nowhere", although various museums around the world have displays that present various bits and pieces of the evidence.

The new gallery of evolution in the ROM seeks to fill this void by displaying the three major categories of evidence on which the theory of evolution is based: (1) evidence from the diversity and relationships of organisms; (2) historical evidence from the geographic distribution of animals and plants, the fossil record, and homologous structures of large groups of organisms; and (3) evidence for the hypothesized mechanism of evolution by natural selection.

The gallery is organized in three sections to reflect these categories of evidence. The first section contains beautiful displays showing some of the incredible diversity of molluscs, beetles, ducks, and conifers, as well as an aquarium with brilliantly coloured butterfly fish from around the world. The points made here are that within the immense variety of forms of life we can see distinct groups, and that the similarity of organisms in a group provides evidence that they have evolved from an ancestor possessing the basic characteristics of the group.

The second section presents evidence used to chronicle the history of life on earth. Displays showing the geographic distribution of red oaks, South American tanagers, and the famous Darwin's finches from the Galápagos Islands indicate that these organisms are found in limited ranges and suggest that this is because they still occupy the areas where their ancestors evolved.

The great age of our planet is revealed in a case whose theme is rocks and time. Various sediments from an Ontario lake are shown to record about 2000 years of history; the rocks of the Niagara escarpment and the Grand Canyon, by contrast, date back millions of years. Visitors can see how the ROM geochronology laboratory dates rocks radiometrically, and the display includes a rock estimated to be several billions of years old.

The process of fossil formation is shown to be a rare event; the fossil record is therefore only an imperfect record of life on earth. However, a display of the appearance of key fossils in the record reveals clearly that invertebrates appeared before vertebrates, and that reptiles preceded both birds and mammals. Two classic fossils are shown in another case: *Archaeopteryx*, intermediate between reptiles and birds, and *Probelesodon*, intermediate between reptiles and mammals.

The paddle of an extinct plesiosaur, the forelimb of a bear, the arm of a



Right: Artist's rendering of the new evolution gallery.



human, the wing of a bat, and the front leg of a mole are among the structures featured in another case. Despite modifications that enable them to perform very different functions, they all contain the same bones, which suggests that they were inherited from a common ancestor in the distant past.

The third section of the gallery presents the evidence for the mechanism of evolution. A display of butterflies, landsnails, beetles, snakes, and sparrows shows that differences occur among individuals and among populations. Genetically based differences are passed on from generation to generation by genes located on chromosomes. This is illustrated by displays of the chromosomes of common animals and plants, and the eye-colour genes for the much-studied fruit fly. Well-known mutations in humans, fruit flies, and frogs from Argentina show how the raw material for evolution is produced and concealed in populations.

Genetic differences confer different survival abilities on individuals, the best adapted ones contributing more offspring to the next generation. This is the basis for both artificial and natural selection. The breeds of domestic pigeons, the colours of eggs from Easter egg chickens, and the high protein content of corn kernels are presented as examples of artificial selection by man for genetic differences among individuals. Another display shows how complex adaptations have arisen in African swallowtail butterflies, peppermoths, and snails as the result of natural selection. The male birds-of-paradise, whose bizarre plumage adorned the hats of fashionable ladies in bygone years, illustrate how selection has produced gaudy males to ensure correct mate recognition for each species. The final case shows how selection is leading to the origin of new species of organisms. At the end of the gallery a billboard presents a survey of exciting new research developments that are revolutionizing our views on evolutionary processes.

To supplement the conventional display cases, the gallery also incorporates an audiovisual programme that can be seen from the comfort of a raised sixty-seat podium. The programme, which is projected onto a large screen above the cases, shows how Darwin arrived at his theory of evolution and recapitulates the highlights of the gallery.

A large proportion of the animal life on earth is composed of creatures commonly referred to as invertebrates. What are invertebrate animals? Where do they live? In what ways are they alike? How do they differ from one another? What are some examples of these animals? Answers to questions such as these are given in the new gallery of living invertebrates.

Unlike fishes, amphibians, reptiles, birds, and mammals, invertebrates do not have backbones. That single, somewhat arbitrary characteristic has been used to separate human beings and their vertebrate relatives from the remaining 97 per cent of the animal kingdom. It would be just as logical to divide animals into sponges and nonsponges, or arthropods and nonarthropods. In short, the invertebrate concept is an artificial one; the name *Invertebrata* does not appear in contemporary classifications of the animal kingdom, but the term continues to be used as a matter of convenience.

Invertebrates, sometimes condescendingly called the "lower animals", comprise a rich and varied assemblage. Some, including various worms and most molluscs and arthropods, are motile and easily recognized as animals. Others, such as the sponges, hydroids, sea anemones, corals, bryozoans, and sea lilies, are attached to something else and resemble plants. Many invertebrates are flowerlike, not only in form but also in colour. Coral reefs are sometimes called underwater gardens, yet they are composed largely of invertebrate animals.

Invertebrates display great diversity in shape, size, complexity, development, physiology, and mode of existence. The new gallery of living invertebrates provides a glimpse of this diversity and serves as a brief introduction to these animals. In one display case, crabs are used to illustrate the variety of forms and habits even within one closely related group. In adjoining cases, variety in in-



BILL ROBERTSON, ROM

Above: A beetle composed of beetles displays the great diversity among individuals of a species.

## The Gallery of Living Invertebrates

Dale Calder  
Associate Curator  
Department of Invertebrate Zoology



## GALLERY GLIMPSES



Above: Mrs. Renate Carson and Dale Calder of the Department of Invertebrate Zoology selecting specimens for display in the new gallery.

Right: An array of invertebrates under study by Mrs. Carson.



vertebrate skeletons is explored, and types of body symmetry are explained by models, drawings, and specimens. Invertebrates inhabit practically every part of the biosphere—land, sea, fresh water, and air. While most are free-living, a substantial number are parasitic. Specimens from a number of habitats, including coral reefs, intertidal rocks, fresh waters, and estuaries, are displayed in a series of “jewel box” cases. The gallery concludes with a brief look at the way scientists reduce to an ordered system the 1.5 million immensely varied species of invertebrate animals, by putting animals with common characteristics into groups and then classifying the groups.

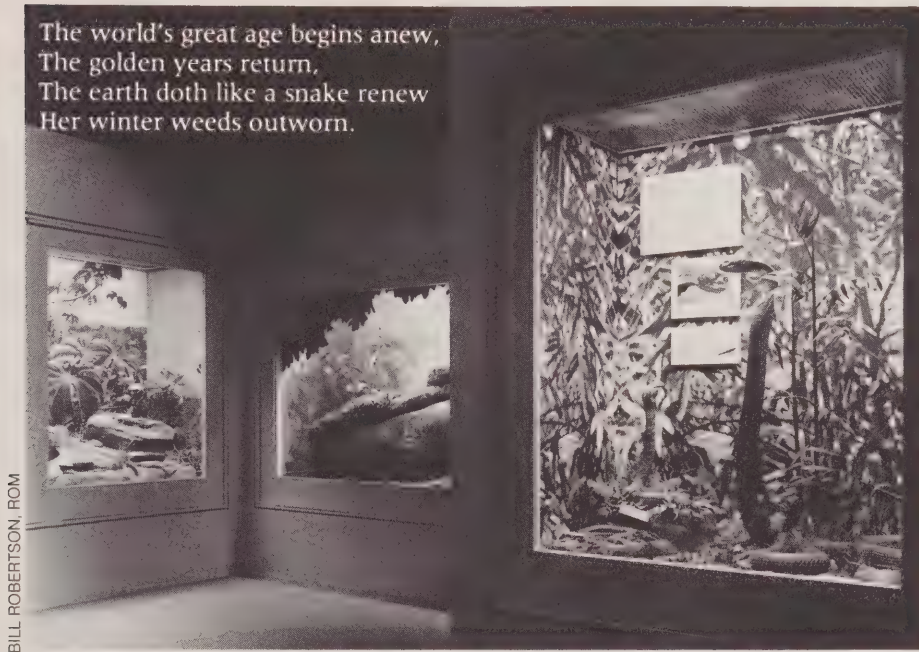
The theme of the gallery, invertebrate diversity, was conceived by Renate Carson. The design and final content were the work of Robert Barnett and Leslie Munro of Exhibit Design Services of the ROM, in consultation with Mrs. Carson and Dale Calder of the new Department of Invertebrate Zoology. The gallery of living invertebrates, occupying approximately 40 m<sup>2</sup>, is an interim one; when more space becomes available, the gallery will be enlarged to 90 m<sup>2</sup>, and further topics will be added.

Why bother with invertebrates? Many of them are admittedly obscure or unfamiliar, but all are part of the web of life on our planet—a web that includes the human race.



## Renewing the Reptile Gallery

E. J. Crossman  
Curator in Charge  
Department of Ichthyology  
and Herpetology



Left: Three cases, showing some of the larger snakes and the diversity of habitats of reptiles.

These lines from Shelley's *Hellas* seem highly appropriate to the renovation segment of the ROM's building project. As far as the exhibits and galleries are concerned they do begin anew, the visitors will return, and many of the animals in the reptile gallery have had their outworn winter weeds refurbished or replaced.

The scope of the gallery was determined by the July target date, the available budget, and the number of other galleries to be planned and implemented simultaneously by a small staff. As a result, the reptile gallery, located in the connecting wing of the second floor, is referred to as an interim gallery—a halfway point between the old galleries and the truly new galleries of July and the future. Past visitors familiar with the older "Carling's Gallery of World Reptiles" will recognize many of the models.

In this exhibit the tuatara, the lizards, crocodilians, snakes, and turtles are arranged in twenty-three cases and dioramas in six thematic units to convey information on the diversity of living reptiles, and the environments in which they live. The themes developed are: an introduction to reptiles, a survey of reptiles of the world, habitats of reptiles, defence, the distinction between poisonous and harmless snakes, and Canadian reptiles and their identification. Five of the twenty-three cases have been used to increase the representation of the Canadian fauna.

A survey of world reptiles uses the largest portion of the gallery and includes separate exhibits on turtles, the American alligator, the Nile crocodile, lizards, and four cases depicting natural groupings of snakes. The very impressive (4.2 m long) Nile crocodile is interestingly displayed as if it were about to slide down the muddy bank into the Nile. Graphics associated with this exhibit attempt to give more information on the ancient and interesting crocodilians, depicting the various kinds, their world distribution, and answering perennial questions like "How do you tell a crocodile from an alligator?"

Another section, on habitats, features a North American desert scene which contrasts the reptiles found there during the day with those found only at night. Other cases portray the awesome larger snakes including the python, anaconda, boa constrictor, and bushmaster.

Among the ideas the gallery attempts to convey are the low level of danger, especially in Ontario, from poisonous snakes and the need to recognize and protect the harmless and beneficial members of this misunderstood group.

In the large section on Canadian reptiles the animals are presented in a way that is intended to help the gallery visitor identify them when they are encoun-





Top: Keith McLaren paints the model of an African puff adder. The dark snake behind the puff adder is a model of a cottonmouth from the southern U.S.

Bottom: An early stage in gallery preparation with ROM staff members applying some of the many skills necessary to complete an exhibit.

tered in the wild. For the snakes this is accomplished by grouping the species by colour patterns.

A single case in the introductory section is dedicated to changing, short-term exhibits. The one in place when the gallery opens presents the problems associated with the private or commercial importation into Canada of whole animals, or of articles manufactured from parts of animals, that are covered by the Convention on International Trade in Endangered Species (CITES). The ROM acts in an advisory capacity in regard to CITES and this case attempts to persuade viewers to avoid purchases that encourage the killing of endangered species.

One of the problems with a natural history exhibit is the fact that we cannot display real animals. Of the animals on exhibit only the alligator, the crocodile, and parts of some of the turtles are real. In contrast, the whole of the Burmese tortoise, including the shell, is moulded fibreglass. The other "animals" are either hollow latex models or older wax models, each possessing every feature of the real animal, since they were prepared from moulds made from carefully posed real animals. The painstaking skill of ROM artists who paint the models to perfectly duplicate living reptiles is what makes the illusion complete. The bulk of the models were removed from the old gallery, revitalized, and installed in this interim gallery with newly designed cases, photographic backgrounds, and lighting. New also is the concept of three levels of informative labels—a visitor can consume whatever quantity of facts is appropriate to individual needs or interests. Care has also been taken to ensure that the gallery will be as instructive as possible for school classes whether guided by ROM teachers or by the class teacher.

The gallery represents the combined efforts of a vast array of people in the departments of ichthyology and herpetology, design, art, education, photography, exhibit maintenance, and carpentry. Special mention must be made of the efforts of Leslie Munro, the designer, and of Jim Lovisek. Jim was involved in everything from the original storyline, to finding and posing specimens, to writing label copy. He also shared the important task of visiting the gallery daily for the hundreds of contacts necessary to see that final quality was consistent with the aspirations of the ROM and of the Department of Ichthyology and Herpetology for the 1982 galleries.

This interim gallery will eventually be replaced by a truly new herpetology gallery that will treat the intriguing story of the amphibians as well as that of the reptiles. All of us who have been involved with this interim gallery hope that the renewed winter weeds of the reptile gallery will be both enjoyable and instructional, and that the future herpetology gallery will be even better.

## *The Roman Galleries*

Paul Denis  
Research Assistant  
Greek and Roman Department

Museum visitors will have a chance to reacquaint themselves with the ROM's important collection of ancient Roman artifacts when the Museum's new galleries devoted to Imperial Rome and her provinces open this summer. These galleries will contain works of art as well as interesting archaeological objects.

Portraiture, perhaps Rome's greatest contribution to Western art, is given its due place at the beginning of the Roman galleries. Here the viewer encounters portraits in marble and on coins of Roman emperors, their wives, and other notable Roman personalities. These marble and medallion portraits are placed below a large wall map that shows the extensive spread of the empire, covering the entire Mediterranean world from Britain in the northwest to the borders of Parthia in the east.

Examples of Roman ingenuity and technical expertise are presented as specific themes covering a wide range of topics, including glass making, pottery, and metallurgy. The display on glass techniques presents a concise history of glass making, from early Romano-Egyptian faience to the later blown glass. Various pottery techniques used by the Romans are explained and illustrated by a wide selection of ceramic vessels and terracotta statuettes from diverse regions of the empire. Relief-decorated samian ware from Gaul, Arretine ware from Italy, and red-slip ware from North Africa are just a few examples that demon-



strate the variety and beauty of Roman pottery. The Romans' mastery of metals is reflected in finely wrought swords, bowls, and fibulae. The more practical side of Roman metalwork is evidenced by such articles as shears, nails, and a fragment of a lead water pipe.

Roman taste for finely crafted luxury items is treated in a separate display. This exhibit consists of numerous examples of gold jewellery, high quality bronze household furnishings, silver table utensils, and delicately carved examples of marble sculpture.

Romans enjoyed being entertained at the theatre, the circus, and the Colosseum. In our exhibit dealing with public games and entertainments, objects depicting these pursuits are shown—comic masks and statuettes of actors from the theatre and a lamp showing a victorious charioteer at the Circus Maximus; from the arena we have a gladiatorial helmet and marble reliefs carved with strikingly realistic scenes of combat.

Another important aspect of Roman life, covered by two exhibits, deals with burial practices and funerary artifacts in both the west and the east: cinerary urns in marble, glass, and lead, and marble sarcophagi represent the west, while for the east, encaustic mummy portraits on wooden panels and mummy masks illustrate Egyptian customs.

The Roman provinces of Britain, Syria and Palestine, and Egypt are treated separately in their own display cases. The Romano-British exhibit consists mainly of items from daily life, such as leather shoes, iron keys, and millstones. The Syro-Palestinian case is highlighted by many superb examples of Roman glass vessels in all shapes and sizes. The Romano-Egyptian collection contains fine examples of bronze vessels, faience bowls, and terracotta statuettes.

The final gallery displays artifacts illustrating the post-Roman world, both in the west and in the east. Iron weapons, fine jewellery, and simple vessels from Anglo-Saxon Britain and Merovingian Gaul are some of the objects that illuminate our understanding of our distant ancestors. The Christian element from this phase of history is clearly evident in the exhibits dedicated to Coptic Egypt, Early Byzantine fine objects, and the "Christian alcove". These three displays present objects with overtly Christian symbols such as crosses and less obvious symbols such as peacocks or fish. Everyday objects from jewellery to pots and pans are juxtaposed with the religious artifacts, providing a wider glimpse of life in the Near East after the Roman Empire.



ROM PHOTOGRAPHY DEPT.

Above: Bronze leopard's head from a couch fitting, 1st century B.C.–1st century A.D..



ROM PHOTOGRAPHY DEPT.

Above: Obverse of a gold aureus, showing a portrait of the Roman emperor Vespasian (A.D. 69–79).



Left: Clay lamp decorated with a scene of a victorious charioteer at the Circus Maximus, Rome, 1st century A.D..



## *The Chalcolithic and Early States Galleries*

Janet Emonson  
Research Assistant  
West Asian Department

Replacing the plethora of pots and the multitude of metals that characterized the old Egypt and Mesopotamia galleries, the new Chalcolithic and Early States galleries draw upon the latest museological principles—the use of a storyline, the inclusion of material other than artifacts, and informative labelling.

The new galleries describe the Egyptian and Mesopotamian societies of 8000 to 4000 years ago. During this period both societies underwent parallel developments—from tribal forms of organization to states with centralized governments. Artifacts from both societies, therefore, are displayed side by side for contrast and comparison. Many of the objects from the old galleries are used again. But there is also on display, for the first time in our permanent galleries, material excavated in ROM digs.

The cultures along the Tigris, Euphrates, and Nile rivers were the first in the Mediterranean basin to take the steps toward what we call civilization. The artifacts have been selected and displayed so as to illustrate these steps. The first gallery discusses the Chalcolithic period (6000–3000 B.C.), a time during which technological and social advances rendered the tribal system of government inadequate.

Four pots of similar shapes and different sizes which look like an early set of kitchen canisters are, in fact, just that—storage vessels. Flint blades with a sheen resulting from their use as sickles show that grain was used for food. Bones of domesticated and wild animals tell of other food sources. All these objects are displayed together in a case that describes the advances in subsistence technology during the Chalcolithic period. Colour photographs of people today using age-old methods further illustrate ancient farming techniques.

Elaborately painted pottery and well-crafted stone vessels and knives indicate that some people had the time to develop special skills. These pieces form part of the contents of the second case, craft specialization. Trade and transport are illustrated in the third case. Lapis lazuli beads found in Egypt and obsidian found in Mesopotamia are evidence of trade with Afghanistan and Turkey respectively. Models and paintings on pots show the types of boats used for river transportation.

The final case of the Chalcolithic gallery illustrates social stratification as we can discern it from burial practices (some tombs are richer than others) and architecture (some houses are larger and better made than others).

The Early States gallery continues the story, describing the system of centralized government that developed out of Chalcolithic society. As in the Chalcolithic gallery, each case deals with a theme—economy, religion, warfare, the development of leadership classes, and kingship. Standardized weights and measures used in the economy case are evidence of a regulated trading system. Statuary and fine alabaster vessels demonstrate the existence of a wealthy leadership class. A splendid collection of gold jewellery from the Royal Tombs at Ur in Mesopotamia, loaned by the University Museum, Philadelphia, illustrates the fabulous wealth of the early kings. The Royal Tombs are examples of unique



Right: Painted pots are evidence of early craft specialization. These three are from Mesopotamia, 5500–3000 B.C.





Far left: Trade during the Chalcolithic period is indicated by this figurine made of gold foil that was found in Egypt but that possibly came from Mesopotamia.

Near left: Cast bronze statuette representing King Shulgi, a Sumerian ruler of about 2100 B.C., carrying a basket of building material on his head. The king was responsible for the initiation of large building projects.

burial practices, but they also give evidence of the royal power. When the king was buried, he was not alone. His entire retinue, dressed in all their finery, willingly went to their death and were buried with him.

The most visually impressive features of the period of the Early States are the monumental buildings that the people constructed to be symbols of their state society. Huge drawings (3.6 m × 6 m) of reconstructions of the Egyptian Step Pyramid of Djoser and the Mesopotamian Eanna Temple complex provide the visitor with an idea of the impressiveness of these buildings even to 20th-century eyes.®



# The Big Shuffle

*Collections management during expansion*

Toshio Yamamoto



Right: In its long existence, this Dog of Fu (part of the former Chinese Garden display) has done a lot of travelling: from China to the ROM, from a Museum gallery to the Museum garden, from the garden to a holding area, and finally to its new home in the Terrace Galleries. Here, in September 1981, it is shown being lowered into Level 1 of the partially completed Terrace Galleries building.



From that far-off day in November 1977 when the Museum's Board of Trustees approved the final planning report for the renovation and expansion project, the Museum was committed to a task larger and more complex than it—or perhaps any other museum—had ever had to undertake before. The ROM is a rarity among world museums in that it is a museum of both the arts and the sciences. Its collections consist of more than six million artifacts and specimens—from fragile porcelain to giant dinosaur bones. All these, together with their storage equipment, had to be transferred to new locations; almost all offices and laboratories had to be moved; and 90 per cent of the galleries in the main Museum had to be dismantled to make way for renovations. And for reasons of safety and security, all of this had to be accomplished without removing any substantial number of objects off-site, even though this meant that some collections would have to be moved more than once before finally reaching their new permanent quarters in department premises or galleries.

In describing the move, I was tempted to recount the numerous planning processes we had to go through before we arrived at a satisfactory methodology, and to list the long series of events in chronological order. The graphic representation of logic networks, Gantt bar charts, and critical path flow charts would have made an impressive display in themselves, but they would have conveyed only a mechanistic notion of the activities of the last six or seven years.

Before 1977 my involvement with the planning for renovation and expansion was limited to the departmental concerns of the Department of Entomology and Invertebrate Zoology. At that stage the whole process was still surrounded by uncertainty and speculation. Now, suddenly, with the adoption of the final planning report, the Museum was faced with the task of putting in place the organization necessary for developing and implementing institution-wide plans for the care and protection of the collections during an unparalleled upheaval that was no longer a speculation but an imminent reality.

The first step was the appointment of a coordinator of collections management to correlate the work of the service departments and their interrelationships with the curatorial departments, and to provide planning liaison with the project director and the gallery design group. I was asked to assume this post, and in this capacity I joined the Collections Management Task Force (CMTF) in May 1978.

The CMTF's first test came in the early summer of 1978 when the preparation of the site for the Curatorial Centre began. Because the Crystal Cave display and the European clock gallery were in corners of the building that had to be demolished, the removal of these displays was the immediate task. In addi-



Above: Exhibition Hall, located in the south courtyard, was demolished to make way for the new Curatorial Centre. This phase of the expansion project brought us our first challenges of the move.



Left: As each object was transferred to a new location (and many were moved more than once), the computer-based record was updated. Gillian Pearson of the Registration Department enters data on a terminal directly connected to the Ottawa-based computer.





ROM PHOTOGRAPHY DEPT.

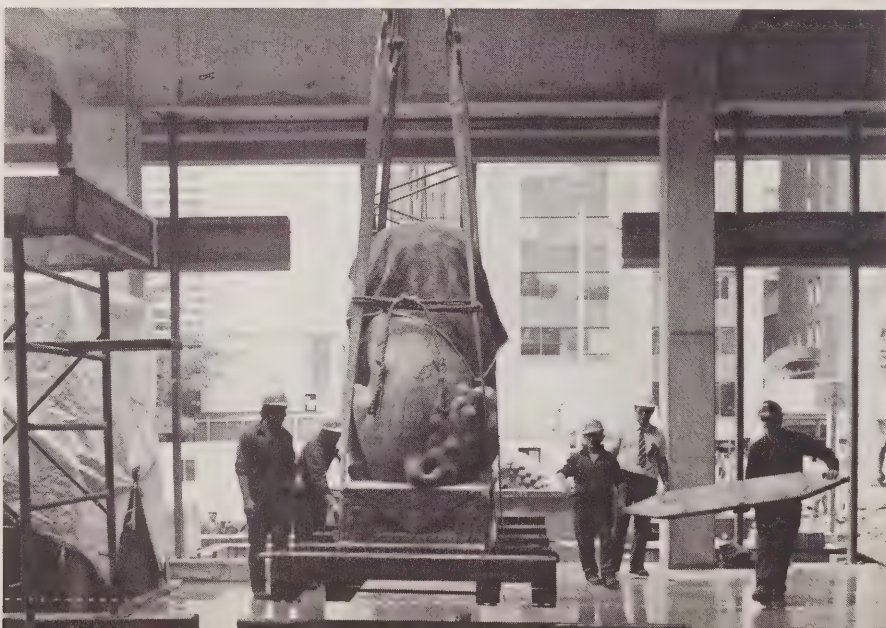


BRIAN BOYLE, ROM



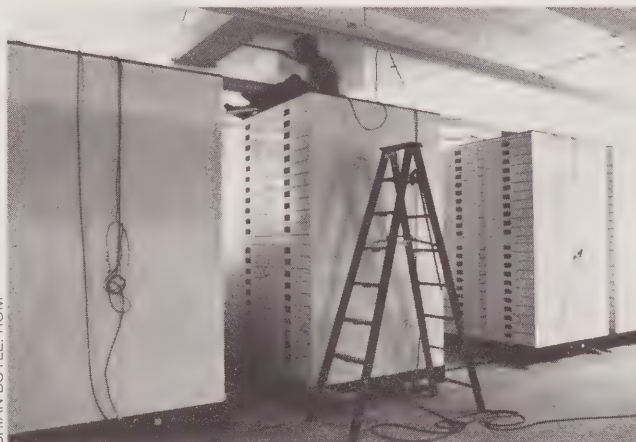
BRIAN BOYLE, ROM

The Chinese Garden and the cafeteria had to make way for the Terrace Galleries. The figures from the Chinese Garden were moved twice, from the garden (top right) to a holding area, and then to the partially completed Terrace Galleries (bottom). The first move was done in the winter of 1979–80 (middle). Since water or ice would have increased the chances for breakage, the figures were wrapped in plastic (above) well before the move.



BRIAN BOYLE, ROM





tion, programmes were instituted for protecting gallery material sensitive to the vibrations of demolition.

Throughout all the turmoil the curatorial staff had to have access to their collections so that the work of gallery design and development could proceed. In order to keep track of individual objects as they were moved from one temporary storage location to another, Sonja Tanner, the Museum registrar, obtained a grant from the National Inventory Programme for a location record project. It was proposed to have minimal records based on the central accession files entered into the Ottawa computer. Minimal records are just that—a number or two, a description (for example, “Greek amphora”), and a location—a skeleton of the information available on the object. Without the aid of the computer printouts, the task of finding a particular object or of ascertaining the contents of a particular room or storage case would have been a time-consuming job. As it was, every object was tracked throughout its movements. Even before the start of the major collection moves, printouts sorted by location were available.

One of the most spectacular features of the project was the dismantling and moving of the Ming Tomb complex. These large stone figures and gateways had been moved from inside the Museum to the Chinese Garden in 1959 by the firm of Hendrie and Company, Ltd. When the tomb was to be moved again to a temporary holding area north of the west wing, the same company was called in and some of the people who had worked on the 1959 move returned. The

Top and above left: The Museum’s preparators were responsible for the packing and moving of almost all of the collections. Joyce Lister (top) packs the Far Eastern ceramic collection; Susan Corrigan and Nick Keresztesi (above left) work in part of the European galleries. Smaller objects were individually packed in drawers that were placed in mobile storage units.

Above right: Compacted storage systems have been installed in four departments in the new Curatorial Centre—here the sliding cases of the Textile Department are shown. Increased floor-loading capacities have also been provided in other collection storage areas for future use.



Right: Hilary Cook, the chief carpenter, and Vivian Peverley, the head preparator, examine the metopes in the Athens gallery to decide on the best way to remove them.



BILL ROBERTSON, ROM

Below: The stuffed mammals and birds were removed from the life sciences galleries and temporarily stored on the second floor of the centre block.

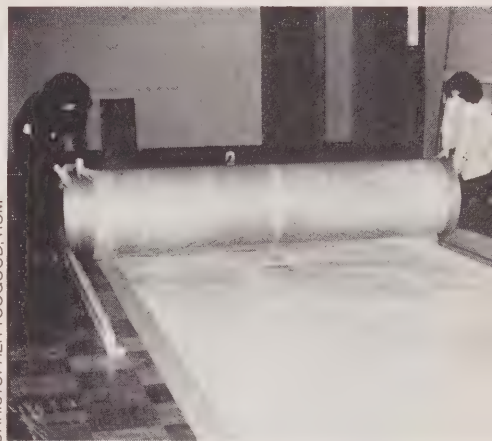


BRIAN BOYLE, ROM





CHRISTOPHER TOOGOOD, ROM



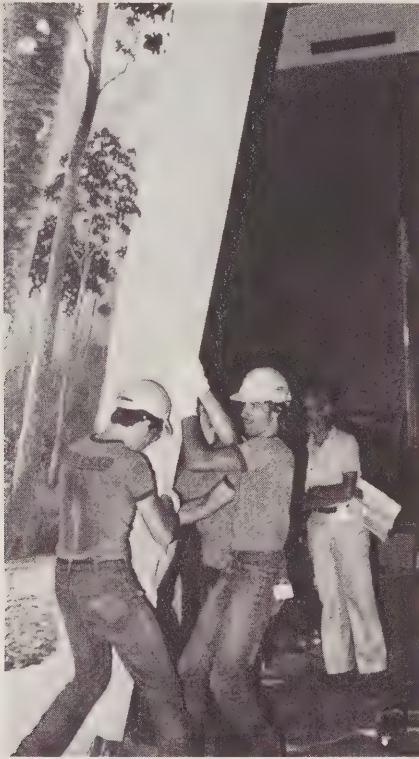
Above: Some of Sylvia Hahn's large murals were taken down. The canvases were removed from the stretcher frames, covered with glassine paper to protect the surfaces, and then rolled onto large-diameter sonotubes.

Left: The north wall of the Bishop White gallery—the only one of the three wall paintings that remained in place.

Below: Diane McKay and Toni Reiner of the Conservation Department prepare the last few panels of the west wall painting for removal.







BRIAN BOYLE, ROM

Above: Under the supervision of the ROM's curatorial departments and preparators, a commercial moving firm helps clear the life sciences galleries. The very large and cumbersome diorama backgrounds were carried from the third floor of the east wing, down the stairs, and across to the second floor of the west wing.

Above, right: Mixed feeling accompanied the end of the demolition stage of the second floor of the centre block. On the one hand, it represented a considerable accomplishment; on the other hand, it served to remind us that our work was but half done. This was the former Athens gallery in May 1980.



BRIAN BOYLE, ROM

size and weight of these precious objects alone were awkward enough, but there were other problems as well. For example, for the 1959 move, the tiled roofs of the gateways were dismantled and they had been put back together with an eye to permanence. Since it would have been extremely difficult to take them apart again safely, large steel cradles were built around them and the roofs were removed all at once. The cafeteria was demolished and excavation for the Terrace Galleries began; but it was to be eighteen months before the tomb could be moved yet again and reassembled in its new setting in the partially completed Terrace Galleries.

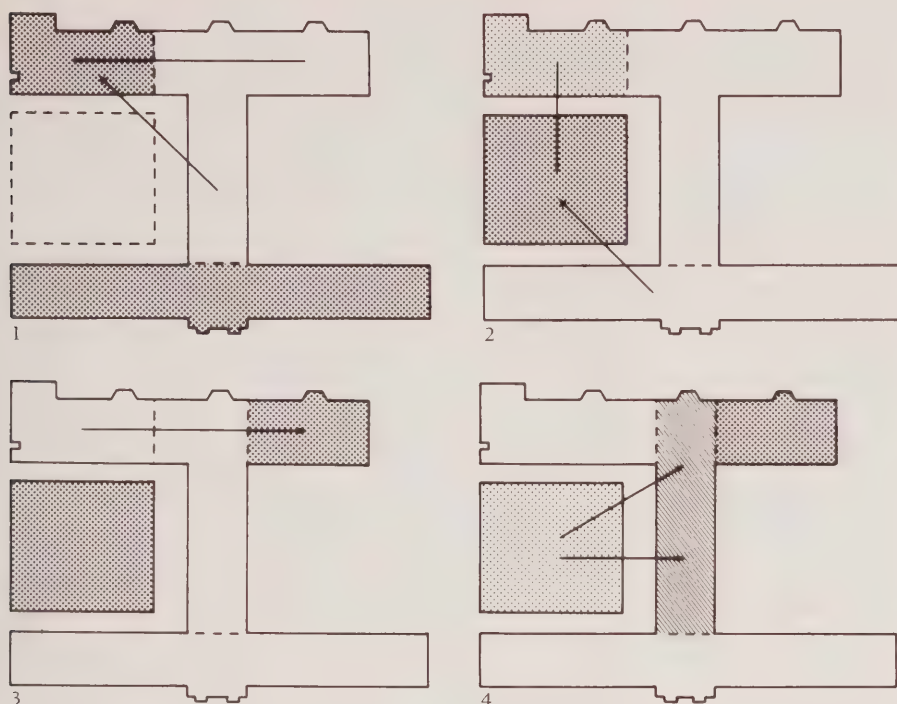
On 8 December 1979 the centre block and the west wing—comprising three-fifths of the gallery space in the main building—were closed to the public, and the work of dismantling the galleries began. Teams of preparators packed the smaller objects into mobile storage units; the larger artifacts were placed on open racking set up on each floor. Members of the Registration Department recorded each change of location in the computer. As the galleries were cleared of the collections, the carpenters and display technicians removed the cases and other exhibit support materials. In gallery after gallery the same process was repeated.

For some galleries the task consisted largely of the recording, packing, and storing of artifacts and specimens. Other galleries, notably those with fixed architectural elements, posed special problems. In the Athens gallery, we were lucky to have Professor J. Walter Graham to advise us on the operation. Professor Graham, who had been very much involved with the construction of this gallery, was able to provide us with detailed drawings and specifications. With his help, virtually every architectural detail, including the columns, capitals, and ceiling panels, was removed intact. Another former member of the Museum staff, Sylvia Hahn, was also on hand to supply the painting conservators with technical data concerning her large canvas murals that facilitated their removal.

The removal of the Shansi wall paintings from the Bishop White gallery was another special operation. These temple paintings (measuring approximately 5.7 m × 11.5 m; 3 m × 10 m; 3.1 m × 10.2 m) had been transferred from their original site in China in large sections. These had been fixed to three walls in the Bishop White gallery. Originally, because the west wall painting was on an outside wall, only this one was to have been removed in order to permit the reconditioning of the wall behind it. The north and east wall paintings were to remain in place behind protective barriers. But thanks to the efforts of Elizabeth Phillimore, who directed this project, financial help was obtained from the MacDonald Stewart Foundation, which made it possible for both east and west wall paintings to be taken down for conservation treatment at the Scollard Street laboratory.

When all the collections from the centre block and west wing had been gath-





1. First phase: begun 8 Dec. 1979, completed 1 Apr. 1980 (centre block), 1 Aug. 1980 (northwest wing).
2. Second phase: begun 9 Mar. 1981, completed 3 Sept. 1981.
3. Third phase: begun 14 Aug. 1981, completed 5 Nov. 1981.
4. Gallery construction: begun Mar. 1981.

ered into the southern part of the west wing, the vacated space was handed over to the contractors for renovation.

On 12 January 1981, the east wing, the only part of the main building still open, was closed to the public. This date marked the end of an era and the start of an eighteen-month transformation period.

Once the main building was completely closed to the public, the clearing process began in the east wing. Because of the number of public spaces in this wing and the decision to leave the palaeontology displays intact, there was less gallery work involved here. On the other hand, the study collections were not only more numerous but also, in many instances, heavier. The process was made simpler by the classification systems used by the science departments and by the fact that the science collections were to be moved directly into permanent locations in the Curatorial Centre, and so had to be handled only once.

Meanwhile, however, the whole operation had been complicated by the time factor. Because the dates for the turnover of the various spaces in the Curatorial Centre had been delayed for various reasons, the process of occupying the Centre had to be compressed. For example, by having a commercial moving firm, instead of Museum curators and preparators as originally intended, move the collections of several science departments, enough Museum staff were freed to move the art and archaeology artifacts from their temporary storage in the southwest wing to the Curatorial Centre.

In the summer of 1981, while the more recently vacated spaces in the main building were being turned over to the contractor for renovation, the already renovated centre block and northwest wing were returned to the Museum and the work of installing the galleries began. The occupation of the northwest wing made possible the final clearing of the southwest wing, the last area of the main building to undergo renovation.

Looking back over the whole process, one cannot avoid the sadness that comes with the realization that most of the familiar gallery landmarks will never again be seen in the settings to which we have grown accustomed in the Museum we have always known. But there is also pride in the knowledge that the immense and fantastically complex task has been successfully accomplished and that the new Museum that has emerged will inspire even more admiration than the old. In spite of all the odds, we made it happen!®

Toshio Yamamoto's association with the ROM dates back to 1961 when he was employed as a summer student in the Department of Entomology and Invertebrate Zoology during his undergraduate years at the University of Toronto. After completing his B.Sc., he obtained his M.Sc. in entomology from the University of Illinois. In 1966 he returned as a curatorial assistant to the ROM, where his interests revolved around research on the immature stages of aquatic insects and on the systematics of caddisflies. In March of 1978, he became coordinator of collections management, to develop and implement plans for the movement of the collections during the Museum's renovation and expansion project.





## A Tile and a Tomb

### *A Persian jig-saw puzzle*

Lisa Golombek

I must confess to a weakness for jig-saw puzzles, though if you think about it, the whole concept of a jig-saw puzzle is outrageous. You start with something that is whole, intact, coherent, and perhaps even useful. You proceed to destroy it, make it incoherent, and reduce it to fragments. Then you spend hours and hours trying to get it back to a condition that you need never have changed. I am perfectly aware that jig-saw puzzles are a sheer waste of time. Still, I enjoy them. However, probably not many people realize that skills developed in such a pastime can also serve a useful purpose.

If you ordered an expensive, rare vase from overseas and opened the package to find it smashed to smithereens, you might acquire a sudden appreciation of jig-saw puzzle skills. That was how I felt when we first unpacked a shipment containing mosaic faience tile panels bought at auction in New York. No, there hadn't been an accident—we knew that one of the panels would arrive in this condition. That was the deal: one good panel and one bad, both included in the price.

A mosaic faience panel is not like a porcelain vase. It *began* its life in pieces and, like all mosaics, was assembled according to a pattern and set in a matrix such as plaster. The technique of mosaic faience developed in Iran in the 12th century and by the 15th century had become widespread. Large designs were prepared from thousands of fragments of coloured glazed ceramics. In earlier monuments, these fragments were plain bricks to which a glaze was applied. But by the 14th century tiles were formed from a fine clay body, sometimes





WILLIAM C. PRATT, ROM

Two mosaic faience panels were bought by the ROM. One was intact (left). The other (below) arrived in fragments varying from large pieces consisting of three or four tiles still stuck together to mere chips only millimetres in diameter.



WILLIAM C. PRATT, ROM

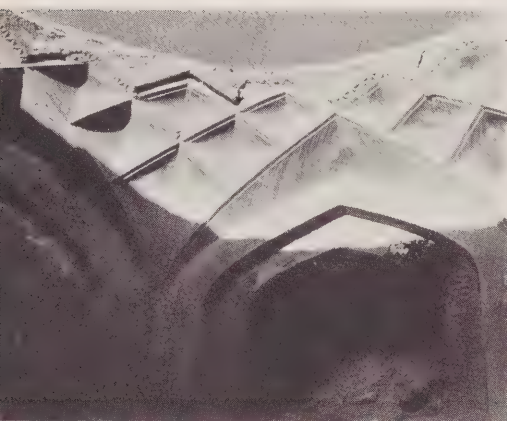


WILLIAM C. PRATT, ROM



WILLIAM C. PRATT, ROM





LISA GOLOMBEK, ROM

Above: The ruined mausoleum in the Darb-i Kushk quarter of Isfahan.

tempered with granules of quartz. These tiles, individually glazed in white, black, green, ochre, turquoise, or dark blue, were cut to shape and the parts were then laid on top of the design cartoon until all of the pieces were in place. Finally, the master tile-cutter backed the pieces with plaster, and the panel was ready for mounting on walls. Since mosaic faience could withstand wind and rain, it was used on the outside of buildings, as well as inside.

Many entrances to public buildings such as mosques are panelled in mosaic faience. The effect is very rich. Not only is the glaze bright and colourful, but light refracted from planes of slightly varying angles lends the surface a shimmer that is almost magical. Some of the more elaborate mosques have interiors completely covered with mosaic faience. Some designs are geometric, others are floral, and still others contain inscriptions from the Quran, the Muslim sacred book.

But to get back to our problem. Here we were with five boxes of mosaic faience fragments of various sizes, ranging from large pieces consisting of three or four of the shaped tiles still stuck together, to mere chips only millimetres in diameter. Was there any hope that the panel could be restored?

When you start a jig-saw puzzle you study the photograph on the cover of the box to form some idea of how to work. Then you find as many “edges” as possible and assemble the frame. Unfortunately, the former owner of the fragmented panel had neglected to make a record photograph of the object before its fall; consequently, we had nothing to follow. The other panel, however, was in fairly good condition, and we assumed, judging from some of the fragments, that the shattered one was similar to, even perhaps a continuation of, the other. In the complete panel a large Persian inscription in white runs along a dark blue ground over a meander of turquoise tendrils. The blue ground is bordered by a band containing a repeating pattern of rosettes on a deep violet ground. The inscription reads from right to left.

For a start, then, it was evident that the fragments that were of fairly uniform width and glazed white were the letters. The dark blue was the ground. The turquoise fragments belonged to the meandering vine, as did the numerous floral ornaments that grew from it. The elements belonging to the borders were easily distinguished.

The reassembly job would have been much simpler if we had known what the inscription said. The inscription on the complete panel seemed to refer to the construction of the shrine of a holy man by a certain Ja’far. The panel had no date, but appeared to be in the style of the 15th century. We started work on the assumption that the fragmented panel would contain further information about the founding of this building, perhaps the name of the holy man who was buried there, and the date of construction. We could also expect to find certain words that were common to such inscriptions—terms for “building” or “shrine”, epithets like “blessed” or “noble”, the more frequently met Islamic names, like “Muhammad”, “Ahmad”, and “Ali”, and titles appropriate to the patron or subject.

We were not exactly groping in the dark, but even with a limited list of expectations, the possible permutations were almost infinite, perhaps a life-time’s work. Had it not been for the arrival of Mrs. Mary Faghani last December, we might have given up hope. Mrs. Faghani had studied conservation in the Iranian city of Isfahan and was about to receive her degree, when the revolution broke out. She emigrated with her family to Canada and found her way to the West Asian Department of the Museum. With her knowledge of Persian, her training in conservation, and her experience in similar exercises at Isfahan, Mrs. Faghani’s arrival aroused hope. And the hope was fulfilled: within two months she had assembled the entire inscription.

First, Mrs. Faghani had attempted to find letters that fitted into the spaces left in the background pieces. The letter “waw”, for example, consists of a ring with a curving tail. The tail would almost certainly have broken away, but the space made for the letter in the background was clearly recognizable. Mrs. Faghani had only to sort through the pile of rings and the pile of tails to find the ones that fitted. She was assisted also by the shape of the plaster backing on each





Above: Mrs. Mary Faghani solving the puzzle.



Left: Detail of the panel during the process of reassembly—the letter “waw”.





LISA GOLOMBEK, ROM

Detail of the tiles (above) on a wall (left) of the Great Mosque of Yazd, Iran, 15th century.



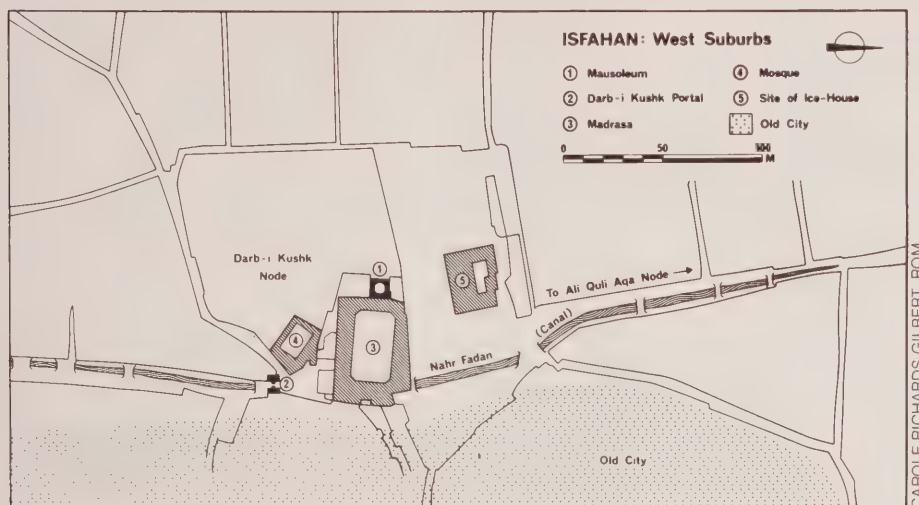
LISA GOLOMBEK, ROM

piece. But perhaps the most useful clue was an unexpected one. Pieces of an old German newspaper had been laid across the back of the panel before it broke. Mrs. Faghani was able to unite groups of pieces by matching words in headlines and columns of text. Nevertheless, the process was tedious; by the end of a month Mrs. Faghani had handled and come to know each one of some five thousand pieces of mosaic. As the puzzle began to take form, she knew exactly which piece was needed, and where to find it.

Mrs. Faghani glued the fragments together with a water-soluble bond. Then the entire panel was glued onto plywood and with its companion panel was mounted in the "shrine" in the new Islamic gallery. The reassembled panel stands to the left of the other panel, as it continues the inscription.

In doubling the length of the inscription Mrs. Faghani made it possible for us to learn more about its meaning. We now know that our Ja'far built the shrine for the tomb of his eminent grandfather, who was a *sayyid*, that is, a descendant of the Caliph Ali, cousin and son-in-law of the Prophet Muhammad. The descendants of Ali are held in special regard by all Muslims, but particularly by the Shi'ites. Their tombs were considered places of pilgrimage—"a source of blessing", as our inscription says. We might have learned more about the grand-





Map of the Darb-i Kushk quarter of Isfahan.

father if our panel had not been broken off at its present limit. We are told only that his title was Zayn al-Mulk, "Ornament of the Realm".

Solving the puzzle of the mosaic tiles was only one part of the greater puzzle that now presented itself. Where did the inscription come from? When had the shrine been built? It was not enough to have returned the artifact to its original condition. We had to know what it meant. Although it could stand alone as an object of great beauty in our gallery, it was never intended to be admired in that way. It was the product of a certain society, and it reflected its aspirations and needs. Could we find out more about the people who made it?

We were still missing the proper name of the grandfather and the date of construction. The first question that had to be explored was the whereabouts of the rest of the inscription. Would it have ended up in another museum or private collection? Were other parts of the decoration of the shrine also removed and ultimately brought to auction?

In the sale at which we had purchased our panels there were indeed other similar panels. One set was dated to the year A.D. 1480–81. Its inscription mentions another Ja'far, son of Imad, son of Ali al-Husayni al-Adhami, who came from the Gulbar quarter of Isfahan. Isfahan has a long history as an important city, and has many monuments worthy of notice. Half a dozen mosques and mausoleums of the 15th century still stand, in various states of repair and disrepair. I wondered whether the dated set of tiles offered at the auction came from one of the known buildings, or from some other that has disappeared.

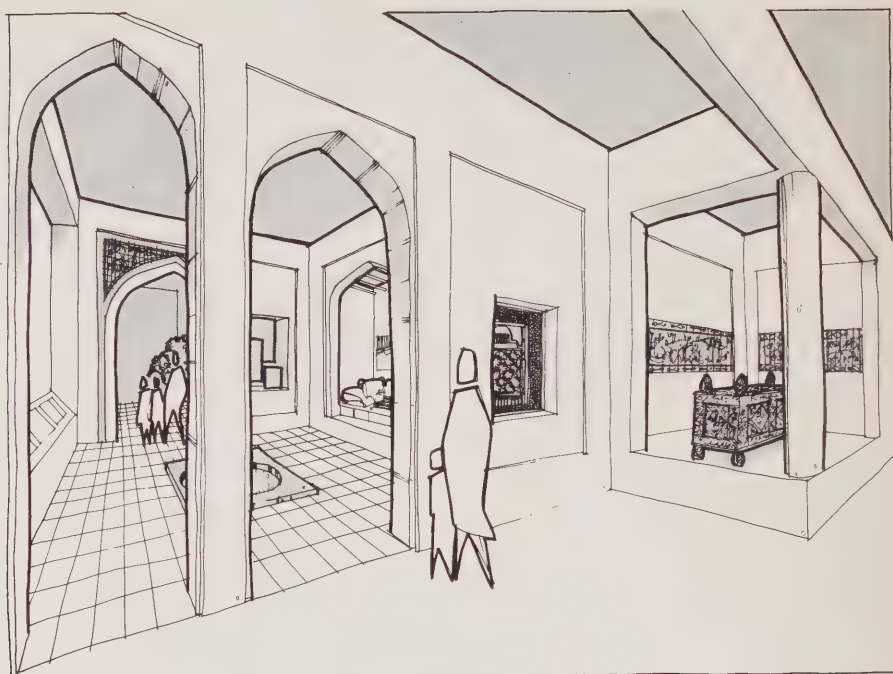
By a stroke of luck I happened to have an old clipping from a collectors' journal describing the entry of these dated tile panels onto the New York market. A photograph accompanying the announcement showed that the inscription on the dated panel belonged to an ensemble which included two vertical "tree-of-life" panels and two spandrels of an arch. All of the panels together formed a frame for an arched opening.

The article described the panels in detail and translated the inscription. Most important, it included a note "Regarding Discovery and Later History". The panels came from

the upper part of the inner doorway of a mausoleum that had long escaped the eye both of natives and explorers on account of being partially buried by the debris of time. Permission to remove the Mosaics was obtained by devious ways only after the discoverer had remained two years in the city, living the life of a native. The work of removal was exceedingly difficult, for the entire wall had to be removed in sections; no other method would permit the removal of the delicate inlays without damage. These operations consumed many months and the chief difficulty was still to be encountered, for the only method of transportation was by camel and the removal from the country of such



Right: Artist's concept of the new Islamic gallery 'townsite'. (Courtesy of Kuypers Adamson Norton, Industrial Designers)



an important religious document was carried out at grave personal risk. From the coast it was transported to Paris in the beginning of 1910 and the colossal work of reassembling thousands of small pieces of Mosaic was commenced.

Did our panels come from the same building? Was it possible to locate the actual mausoleum referred to in the journal? To answer the first question we would have to know the complete name of the grandfather in the ROM's panels, but the inscription stops just before giving us this information. It is likely that the second Ja'far also came from a family of *sayyids*, as suggested by the occurrence of names associated with Shi'ite lineage: Ja'far, Ali, al-Husayni. But we will probably never know for sure if the references are to one Ja'far or two.

As for the second question—the original site of the panels—our first source of information was the data amassed by the ROM's Isfahan urban history project in 1974 and 1976. The purpose of this project had been to record the positions of all public monuments in certain areas of the city and to study their relationship to surrounding street patterns. During one of our expeditions through the lesser known parts of the city, the Darb-i Kushk quarter, we learned of an unpublished mausoleum hidden behind an 18th-century *madrasa*, or theological college. This neglected brick structure was square on the outside and octagonal within. Its arches had been deliberately stripped of tile revetment, but little bits of mosaic faience remained in the arch spandrels. A dome had once rested on the still visible console made up of intersecting plaster arches. Here was another clue to our puzzle. For several years I had been building up a file on domes in 15th-century Persian architecture; this device, the "arch net", occurred in many late 15th-century buildings. It allowed me to date the mausoleum to the period of the dated mosaic faience panels, 1480–81. This ruined mausoleum, shorn of its wealth by greedy predators, seemed a likely host for either the dated set of tile panels, or our own, or both.

According to the collectors' journal, the dated panels came from an entrance area. If this entrance area was in fact a great barrel-vaulted porch, or *ivan*, the dated panels indeed would have been suitable. You can see this by looking at the format of these panels. At the left end the border forms a frame, signifying the termination of the inscription. The terminus of the inscription would have been situated on the left wall of the porch; the beginning would have been found on the opposite wall at the right. The panels would have continued along

Below: ROM carpenters working on the walls of the Islamic gallery.



BILL ROBERTSON, ROM











the back wall and met up with the portion that remains. Unfortunately, the entrance porch was not preserved and could therefore not be measured or studied further.

A second possible site for the tile panels was the semi-octagonal and rectangular niches inside the mausoleum. Because of its original format, which included additional decorative panels, the dated inscription together with the window below it would probably not be appropriate for one of these niches, but the ROM panels might be. The sections into which the ROM panels can be divided according to a subtle break in the design correspond closely to the dimensions of the rectangular niche (1.45 m, 2.05 m, 1.45 m). The ROM panels would have occupied two of the three walls of the niche, the left and the rear wall. The right side is missing.

Could we discover anything more about the context of this mausoleum that might either confirm our findings or lead to further hypotheses? Another look at the data of the urban history project turned up a second 15th-century building in the Darb-i Kushk area. It was the entrance portal to a hostel, dated 1496. Two other public religious monuments—a mosque and a *madrassa* of the 18th to 19th century—stood between the “stripped” mausoleum and this portal. Except for the fact that the mosque and *madrassa* are later than the mausoleum and hostel, this clustering of public institutions could be considered a “service node”. Such nodes are found all over the old city of Isfahan, and we had an opportunity to study them in great detail in the northeastern part of the city. They generally included a religious building, a bath, a few shops, and other commercial buildings. They served the immediate neighbourhood and were usually located at crossroads.

In many cases it can be shown that both the religious and the commercial buildings were erected by a single patron, and that the shops and bath provided income for the religious foundations. We discovered, however, that in other cases the buildings were not all of the same date, and that the later buildings were often replacements for earlier ones of the same type. For example, one bath we visited was evidently a modern structure, but bore the name of an earlier bath on this site, mentioned in the mid-17th-century report of the French traveller Chardin.

The Isfahan study, therefore, suggested that the mosque and *madrassa* in the Darb-i Kushk quarter might well be replacements for buildings erected by the same patrons who had built the 15th-century mausoleum and hostel. All together, they would have formed a service node. If so, it was the second oldest node of this kind outside the old city walls.

We have come a long way from the jig-saw puzzle, but research often works like that. One problem leads to another, rather than to a solution. We may find that the questions raised further on are really of greater interest than the ones with which we started. The conclusions about the growth of the city of Isfahan, to which the mosaic faience panels first led us, are more important to the social history of Iran than would be the identification of the original site of the panels. These served as indicators, pointing to a significant trend, and their validity for this purpose did not depend on finding the precise location of the building. It was sufficient to confirm that they came from Isfahan, and that similar buildings of the same period existed in the Darb-i Kushk quarter.

Of course, we would still like to be certain about the context of the panels, but we dare not stretch the evidence too far. Perhaps some day the remainder of the panel will turn up, or some documents mentioning Ja’far and his grandfather will come to light. Only then will we be able to make a definitive judgement.®

The Isfahan urban history project, during the course of which the ruins of the mausoleum were disclosed, was undertaken in collaboration with Dr. Renata Holod of the University of Pennsylvania, and its second season was made possible by a grant from the Canada Council. The article from the collectors’ journal was kindly provided by Mr. Donald Wilber, who is collaborating with me on a monograph on Timurid architecture.

BILL ROBERTSON, ROM



Lisa Golombek is curator in the West Asian Department of the ROM and teaches at the University of Toronto in the Department of Middle East and Islamic Studies. Her field work has taken her to Iran, Afghanistan, and Central Asia, and more recently to North Africa, Spain, and Egypt. Among her special interests are Islamic calligraphy in textiles and monumental inscriptions, architecture, and urban history. This year her major occupation has been the new Islamic gallery, which was designed as a townsite and incorporates data from field projects and from studies of building methods.







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# Butterflies, Glaciers, and Technology

## *Field work in the Yukon*

Rein Jaagumagi

As we huddled among the rocks trying to pull ourselves farther out of the driving snow, it was hard to remember that this was July. But then, July snowstorms 1500 m up the rocky slopes of the Kluane Mountains in the Yukon are not extraordinary. That we had climbed to this height in search of insects might perhaps seem more so.

What were we doing collecting insects along snowy mountain slopes? Or for that matter, dredging bleak, wind-swept tundra ponds for the small, wormlike larvae of aquatic insects? Moreover, why had we chosen such a remote area as the Yukon? Surely, one thinks, there are better places to collect insects where one doesn't have to drive more than 5000 km just to work in July snowstorms. To best explain we must look back in time nearly twenty thousand years to the late Pleistocene.

As glaciers advanced across North America to cover ultimately nearly all of Canada, only Alaska and the northern and central Yukon remained unglaciated. The geological evidence indicates that the Laurentide ice sheet advancing from the east butted against the Richardson Mountains at the Yukon's eastern boundary and ground to a halt. Palaeontologists believe that this area escaped glaciation and instead developed into an extensive grassland.

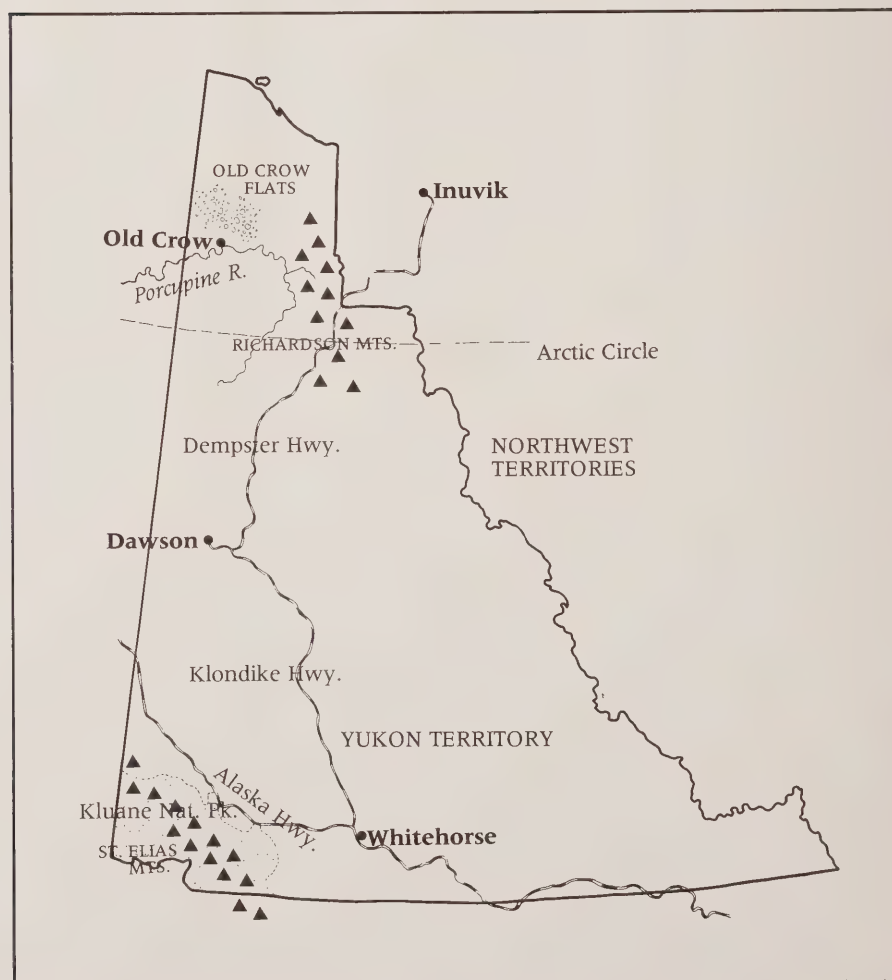
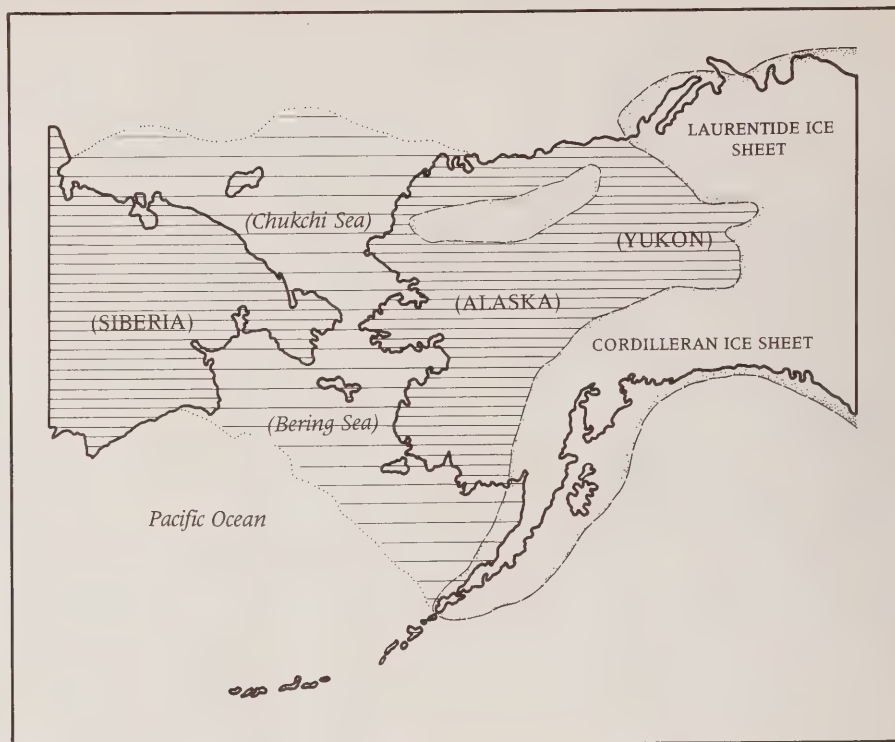
At the same time, with so much water locked up on the land as ice, the levels of the oceans fell drastically. According to geologists, the drop was great enough to expose the shallow floor of the Bering Sea between Alaska and Siberia. Thus, while the northwest corner of North America became isolated from the rest of the continent by glaciers, it became linked by a land-bridge to Siberia. The resulting region, termed "Beringia" by the Swedish ecologist Eric Hultén, comprised the unglaciated area of Siberia, Alaska, the northern Yukon, and the exposed Bering Sea floor. With such a connection in existence for thousands of years it would not be hard to imagine how some animals could have wandered across this land-bridge from Eurasia. In fact, anthropologists have evidence indicating that man himself entered North America via this same route.

Thus to those species already common in North America was added a new component from Eurasia. As a result, a unique mix of animals has occurred in Beringia, since only some of these newcomers followed the retreating glaciers, ultimately to populate the entire continent. A few species, for reasons only to be guessed at, remained confined to the Beringian area. Some perhaps were unable to cross the mountain barrier. Others having crossed this barrier may have been overwhelmed by already established North American species that had moved north from unglaciated areas in the south. It was in order to determine the importance of this area as a refuge and distribution centre for North America's insect fauna during the Pleistocene that we found ourselves shivering on the mountain slope. Finding still undiscovered Siberian insect species (so-

Opposite page: The head of Nines Creek in Kluane National Park, Yukon Territory.



Beringia at the height of the Wisconsin glaciation twenty thousand years ago.





REIN JAAGUMAGI, ROM

Left: Many dusk- and night-flying insects, such as moths and caddisflies, are attracted to ultraviolet light. Shown here at 1:00 A.M. near Kluane Park, mercury ballast lights were useful where no real night fell.

called Beringian species) in this corner of North America was still only an exciting prospect.

In 1979 the ROM's Department of Entomology began a long-term project to investigate the insect fauna of the Yukon. Since then, we have returned each summer from June through August to explore the insects of the many diverse landscapes, from the spectacular mountains of Kluane National Park in the south to the barren tundra of the Richardson Mountains in the northeast. To date, the project has resulted in the collection of more than one hundred thousand specimens.

Kluane National Park, wedged into the southwest corner of the territory, is one of Canada's newest parks. Nearly two-thirds of its 22 000 km<sup>2</sup> are uninhabitable icefields, above which rise the St. Elias Mountains, the highest in Canada. These icefields are all that now remain of the glaciers that once covered most of Canada.

Just as the St. Elias Mountains are an extension of the great chain of Coast Mountains originating in lower British Columbia, so the insect fauna is basically an extension of that found in more southern areas. The high mountain slopes in particular are home to many beautiful and rarely seen species of butterfly. Most famous of these is perhaps the parnassius, found lazily flying over alpine meadows, while equally elusive is the striking jet-black Magdalena alpine, which frequents the rocky slopes high above the tree line.

Almost due north of Kluane in the central Yukon lies Dawson City, centre of the famed gold rush of the turn of the century. Soaring world prices for gold have brought a new generation of prospectors to the area, and today Dawson City is the centre of a renewed search for gold. Since many of the mines in the region lie just within the area unglaciated during the last ice age, they have provided a rich array of fossil remains of Pleistocene mammals.

Lying in a depression surrounded by mountains, the area around Dawson boasts the warmest summers of the territory. Here, as afternoon temperatures climb into the high 20s (°C), great congregations of swallowtails form along the river banks, and fields of wildflowers have their own showy contingent of sulphur and white admiral butterflies. Among these readily recognizable North American species, a few long-established Old World (Palaeartic) immigrants, such as the Alaska swallowtail, can be found.

North from Dawson the Dempster Highway winds 754 gravel-paved, pot-holed kilometres to end on the Mackenzie Delta at the town of Inuvik. Only recently completed, the highway has already been the subject of much controversy. Because it bisects the winter range of the Porcupine caribou herd, one of the last great herds of its kind in North America, the road has come under attack from wildlife biologists and conservationists. The road was begun in the days



REIN JAAGUMAGI, ROM

Above: Designed to catch flying insects, the malaise trap takes advantage of the fact that insects hitting an obstruction will attempt to fly over it. In so doing, they gradually make their way up into the collection container, here being placed on top.



Left: Midnight in mid-July from the Dempster Highway at the Yukon-Northwest Territories border.

Below: A pond from the Dempster Highway. In the foreground is the Yukon's floral emblem, *Epilobium angustifolium*, or purple fireweed.



REIN JAAGUMAGI, ROM



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before environmental concerns were formally recognized; only now are studies underway to assess its impact on the fragile ecology of the North. A number of plans have already been implemented that severely limit development and use of the highway. Unquestionably, however, the highway has opened up a vast new area to scientists. Each year seems to bring more of them, intent on studying yet another aspect of the area's fauna and flora. At times it seems they outnumber all other users of the road who, because of the remoteness and condition of the highway, have never been very numerous.

Since it lies well within the unglaciated area, the Dempster Highway has been an important focal point of our studies of Beringian insects. Here our hopes of discovering new Beringian species were fulfilled. Two summers of intensive work along the highway have yielded species of beetles, caddisflies, and moths that until now were known to occur only in Siberia.

One hundred and sixty kilometres northwest of the Dempster Highway, accessible only by air, lies the village of Old Crow nestled on the banks of the Porcupine River. The region has for many years been the site of archaeological and palaeontological work by the National Museums of Canada. Archaeological finds from the Old Crow River indicate that the region may have been settled by man as early as thirty thousand years ago, evidence that would make Old Crow the oldest continuously settled area in North America. To the north of the village lie the Old Crow Flats, an extensive area of small lakes occupying more than 7800 km<sup>2</sup>. Important as a nesting area for many species of waterfowl, the flats are also a mainstay of the village economy, which, in addition to the annual caribou hunt, relies heavily on muskrat trapping.

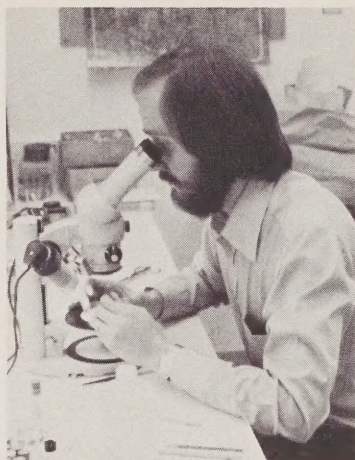
During the summer of 1981 we were able to spend four weeks collecting insects throughout this area of the northern Yukon, thanks to the logistic support of both the Geological Survey and the Archaeological Survey of Canada. Here we were to confront our greatest challenge. In an area where harsh winds and cool temperatures keep most insects well down in the short, dense tundra vege-



Top: The city of Dawson, again the centre of a "goldrush".

Bottom: A closeup view of the Dempster Highway at a pass through the Richardson Mountains.





DALE CALDER, ROM

Rein Jaagumagi is a research assistant on contract with the Department of Entomology. He obtained a B.Sc. in zoology from the University of Toronto in 1974. In 1978 he joined the ROM after working for the Ontario Ministry of Natural Resources and as an environmental consultant with Beak Consultants Ltd. of Toronto. Since then he has conducted a number of field trips in the Yukon and Alaska.

Right, top: A tributary to the Ogilvie River.

Right, middle: The Old Crow Flats, an area just north of what may be the oldest continuously settled community in North America—the village of Old Crow.



ED FULLER, ROM



REIN JAAGUMAGI, ROM

tation, even our most reliable collecting techniques, such as malaise traps, were only marginally effective. The high-powered mercury lights that we had used to such advantage at Kluane and Dawson were of little use in country where the sun never sets. Often all we could do was trudge across the tundra, eyes to the ground, searching for any small movement among the grasses and willows that might betoken the presence of insects. The work done at Old Crow produced many rewards in our efforts both to document the northern dispersal of insects and to add to our knowledge of the unique Beringian fauna.

Today, as the Yukon stands at the threshold of a massive invasion of technology, we find that our studies have taken on an added significance. The effects of large-scale construction projects like the planned Alaska Highway Pipeline can be properly assessed only in the future when detailed information on the flora and fauna is available. Our studies of the insect fauna of the Yukon will be a major contribution in an area where little information is available.

However, all this considered, it still seems strange to sit on a mountain top in July, waiting for the snow to stop.®



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K. Corey Keeble is Assistant Curator of the European Department, Royal Ontario Museum.

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## The Grimsby Site A Historic Neutral Cemetery

*W.A. Kenyon*

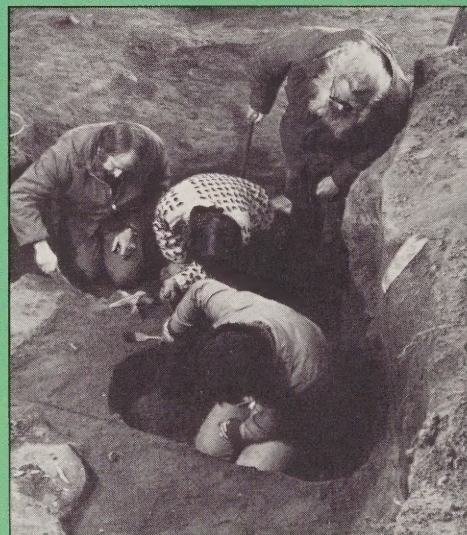


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Dr. Walter A. Kenyon is Curator of Canadian Archaeology, Department of New World Archaeology, Royal Ontario Museum.

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